SHARP SERVICE MANUAL

No. S4224MDMT180S

PORTABLE MINIDISC RECORDER



MODEL MD-MT180(S)

MiniDisc MDLP

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

CONTENTS

SHARP CORPORATION

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

Power source:	DC 1.2 V:	Rechargeable Nickel-Metal Hydride battery (AD-N55BT) x 1
	DC 5 V:	AC adaptor (AC 120 V, 60 Hz)
	DC 1.5 V:	Battery case (Commercially available, "AA" size (LR6), alkaline battery x 1)
	DC 4.5 V:	Optional car adaptor, AD-CA20X (for cars with a 12 - 24 V DC negative ground electrical system)
Power consumption:	7 W (AC adaptor)	
Output power:	RMS: 20 mW (10 mW + 10 mW) (0.2 % T.H.D.)	
Charging time:	Approx. 3.5 hours (90 %) Approx. 5.5 hours (fully charged) (When using the AC adaptor included with the unit)	
Dimensions:	Width: 3" (76 mm) Height: 29/32" (22.9 mm) Depth: 3-9/32" (83 mm)	
Weight:	0.33 lbs. (148 g) with rechargeable battery	
Input jack:	Line/optical digital	
Output jack:	Earphones (impedance: 32 ohms)	
Type:	Portable MiniDisc recorder	
Signal readout:	Non-contact, 3-beam semiconductor laser pickup	
Audio channels:	Stereo 2 channels/monaural 1 channel	
Frequency response:	20 - 20,000 Hz (± 3 dB)	
Rotation speed:	Approx. 400 - 1,350 rpm	
Error correction:	ACIRC (Advanced Cross Interleave Reed-Solomon Code)	
Coding:	ATRAC/ATRAC3 (Adaptive TRansform Acoustic Coding), 24-bit computed type	
Recording method:	Magnetic modulation overwrite method	
Sampling frequency:	44.1 kHz (32 kHz and 48 kHz signals are converted to 44.1 kHz, and then recorded.)	
Wow and flutter:	Unmeasurable (less than ± 0.001 % W. peak)	

Battery life:

	Stereo		2 times long		4 times long	
When using the rechargeable battery (fully charged) included with the unit	Continuous recording: Approx. 7 hours	Continuous play: Approx. 11 hours	Continuous recording: Approx. 9.5 hours	Continuous play: Approx. 13 hours	Continuous recording: Approx. 12.5 hours	Continuous play: Approx. 15 hours
When using one, commercially available, high capacity, "AA" size (LR6), alkaline battery (The rechargeable battery is in the unit, discharged.)	Continuous recording: Approx. 6 hours	Continuous play: Approx. 15.5 hours	Continuous recording: Approx. 9.5 hours	Continuous play: Approx. 19 hours	Continuous recording: Approx. 13 hours	Continuous play: Approx. 22 hours
When using one, commercially available, high capacity, "AA" size (LR6), alkaline battery with the rechargeable battery (fully charged)	Continuous recording: Approx. 15.5 hours	Continuous play: Approx. 27 hours	Continuous recording: Approx. 23 hours	Continuous play: Approx. 32 hours	Continuous recording: Approx. 30 hours	Continuous play: Approx. 38 hours

Input sensitivity:

	Reference input level	Input impedance
LINE	100 mV	20 kohms

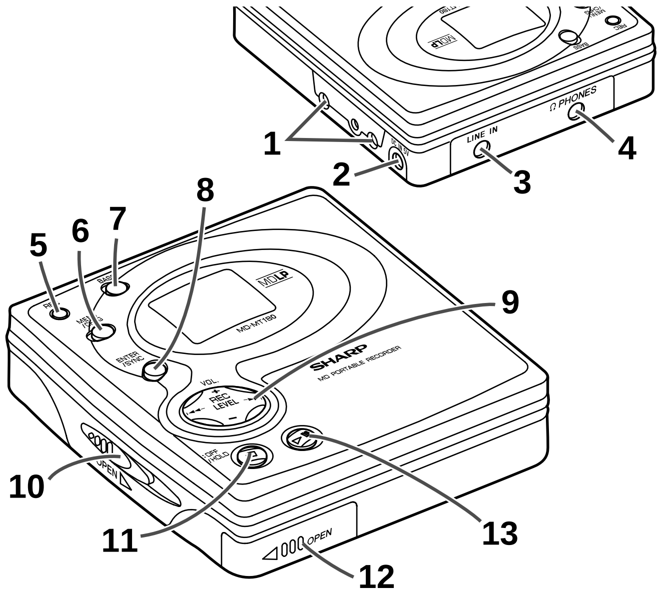
Output level:

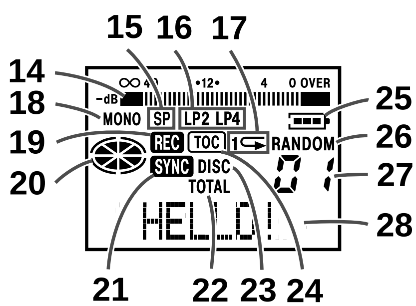
	Specified output	Maximum output level	Load impedance
Earphones	-	10 mW + 10 mW	32 ohms
LINE	250 mV (-12 dB)	-	10 k ohms

Specifications for this model are subject to change without prior notice

- The continuous recording time is for analog inputs when the volume level is set to "VOL 0".
- The continuous play time shows the value when the volume level is set to "VOL 15".
- The above values are the standard values when the unit is charged and used at an ambient temperature of 77°F (25°C).
- The operating time when using an alkaline battery may be different, depending on the type and manufacturer of the battery, and on the operating temperature.

NAMES OF PARTS

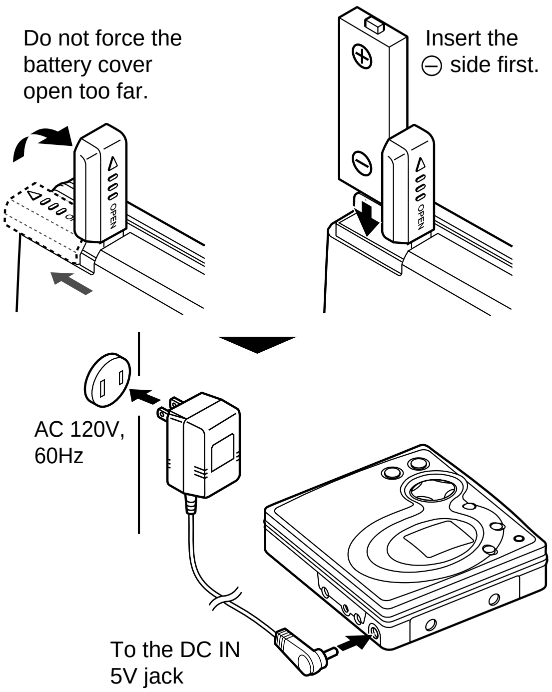




1. Battery Case Connection Terminals
2. 5 V DC Input Jack
3. Optical/Line Input Jack
4. Earphones/Line Output Jack
5. Record/Track Mark Button
6. Menu/Charge Button
7. Bass/Delete Button
8. Enter/Fast Play/Synchro Button
9. Volume/Cursor/Fast Forward/Fast Reverse/ Recording Level/ Name Select Button
10. Open Lever
11. Stop/Power Off/Hold Button
12. Rechargeable Battery Cover
13. Play/Pause Button
14. Level Meter
15. Stereo Recording Indicator
16. Long-play/Recording Mode Indicator
17. Repeat Indicator
18. Monaural Mode Indicator
19. Record Indicator
20. Disc Mode Indicator
21. Synchro Recording Indicator
22. Total Track Number Indicator
23. Disc Name Indicator
24. TOC Indicator
25. Battery Indicator
26. Random Indicator
27. Track Number Indicator
28. Character/Time Information Indicator

OPERATION MANUAL

Using with the Rechargeable Battery



■ Charging the rechargeable battery

When the rechargeable battery is used for the first time or when you want to use it after a long period of disuse, be sure to charge it fully.

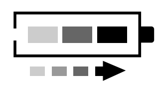
1 Insert the rechargeable battery.

A rechargeable battery other than the AD-N55BT cannot be charged.

2 Plug the AC adaptor into the AC outlet, and then insert the plug on the other end into the DC IN 5V jack.

3 Press the MENU/CHRG button.

The battery indicator will scroll, and battery will begin charging.

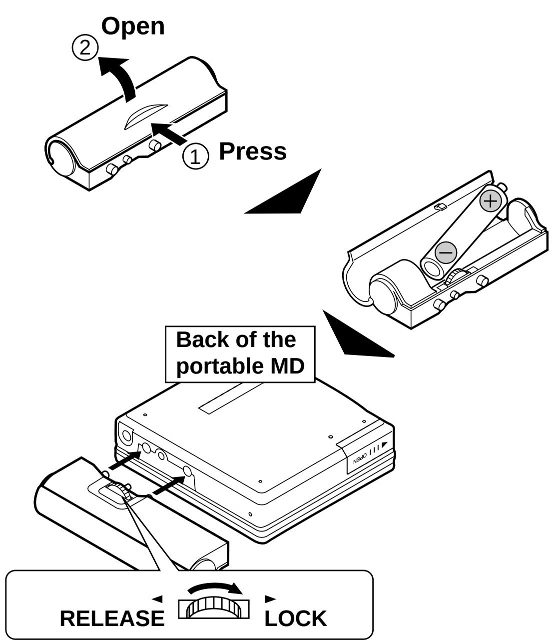


Scrolling

- After the rechargeable battery is charged or used, it will get slightly warm. This is normal.
- When the portable MD is turned on or operating, the battery will not be charged.

Using with the Alkaline Battery

Use one commercially available alkaline battery (LR6, "AA" size).



When using the alkaline battery, be sure to insert the rechargeable battery also.

1 Open the case cover.

2 Insert an alkaline battery into the battery case.

3 Attach the battery case to the portable MD.

Caution:

- While you are using the rechargeable battery and the alkaline battery at the same time, do not remove either of them. If you do, when the unit is in the play mode, playback will stop. When in the recording mode, the recorded contents will be erased, and the power may be disconnected.
- Do not replace the battery or the rechargeable battery during operation.
- **Do not use a rechargeable battery (nickel-cadmium battery etc.) in the battery case.**
- If the unit is not used for a long period of time, remove the battery. (Even if the power is turned off, the battery will be drained slowly but continuously.)

Error Messages

ERROR MESSAGES	MEANING
BATT ENPTY	● The battery has run down.
BLANK MD	● Nothing is recorded. (Replace the disc with a recorded disc.)
Can't COPY	● You tried to record from a copy prohibited MiniDisc. (Record using the analog cable.) ● You tried to record signals other than music (such as data).
Can't EDIT	● A track cannot be edited. (Change the stop position of the track and then edit it.)
Can't PLAY	● You tried to play back a track that cannot be played with this equipment.
Can't READ (*)	● The disc data cannot be read because the disc is damaged. (Reload the Minidisc or replace it with another one.)
Can't REC	● Recording cannot be performed correctly due to vibration or shock.

ERROR MESSAGES	MEANING
Can'tSTAMP	● Stamp function does not work. (Check the number of tracks.)
Can'tWRITE	● Cannot save the TOC information correctly to a MiniDisc.
DEFECT!	● The disc is scratched. (If the recorded sound is not right, retry recording or replace the disc with a recordable one.)
DISC FULL	● The disc is out of recording space.
Er-MD (**)	● The microprocessor has reported a system fault and the unit is out of order. (To have it repaired, go to the distributor where you purchased the unit.)
HOLD	● The unit is in the hold mode.
LOCKED	● You removed a MiniDisc when recording or editing. (Turn off the power before removing the MiniDisc.)
NO DISC	● A disc has not been loaded.

Number or symbol appears in (*) position.

ERROR MESSAGES	MEANING
NO SIGNAL	● Poor connection of the digital cable. ● No output signal comes out from the connected unit to playback. (Use the AC power for the connected unit.) ● The input signal has improper sampling frequency.
PLAY MD	● You tried to record on a playback-only disc.
PROTECTED	● The write protection tab of a MiniDisc is set to the protected position. ● You tried to record on a playback-only disc.
SORRY	● Since a track number is currently being located or updated, the unit cannot accept your command. (Wait for a while and try the operation again.)

ERROR MESSAGES	MEANING
TEMP OVER	● The temperature is too high. (Turn off the power, and wait for a while.)
TOC FORM (**)	● There is an error in the recording signal. (Erase all of the tracks, and then record again.)
TOC FULL	● There is no space left for recording character information (track names, disc names, etc.).
Tr. Protect	● The track has been protected from being erased. (Edit the track with the device on which it was recorded.)
? DISC	● A disc which contains data other than music was played. (A disc which contains nonmusic data cannot be played.) ● There is an error in the signal recorded on the disc.

Number or symbol appears in (*) position.

MiniDisc System Limitations

The unit may have the following symptoms when recording or editing. The unit is not out of order.

SYMPTOM	LIMITATIONS
"DISC FULL" or "TOC FULL" appears even though the MiniDisc still has recording time left.	More than 255 tracks (maximum) cannot be recorded regardless of the recording time. If the MiniDisc is recorded or edited repeatedly or if it has scratches (recording skips scratched parts), you may not be able to record the maximum tracks above.
The remaining recording time does not increase even though you erased tracks.	The unit does not count non-recorded portions that last 12 or fewer seconds to display the remaining recording time. The time may not increase even if you erase short tracks.
The total of the recorded time and the remaining time does not match the maximum recordable time.	One cluster (approximately 2 seconds) is the minimum unit for recording. For example, a 3-second track uses 2 clusters (approximately 4 seconds). Therefore, the actual recordable time may be shorter than the displayed time. (The number of seconds indicates that in the stereo recording mode (SP). It varies depending on the recording mode.)
Combine function does not work.	A MiniDisc on which recording and editing are repeated may not allow the combine function.
Sound skips in fast reverse/forward.	If one track is divided and recorded in separate places on a repeatedly recorded or edited MiniDisc, sound may skip.
A track number is created in the middle of a track.	A track number may be created if there are scratches or dust on the MiniDisc.

Troubleshooting

Many potential "problems" can be resolved by the owner without calling a service technician. If something seems to be wrong with this product, check the following before calling your authorized SHARP dealer or service center.

The unit does not turn on.
- Is the AC adaptor disconnected?
- Is the battery exhausted?
- Is the unit in the hold mode?
- Has condensation formed inside the unit?
- Is the unit being influenced by mechanical shock or by static electricity?

No sound is heard from the earphones.
- Is the volume set too low?
- Is the earphones plugged in?
- Are you trying to play a MiniDisc with data on it instead of a MiniDisc containing music?

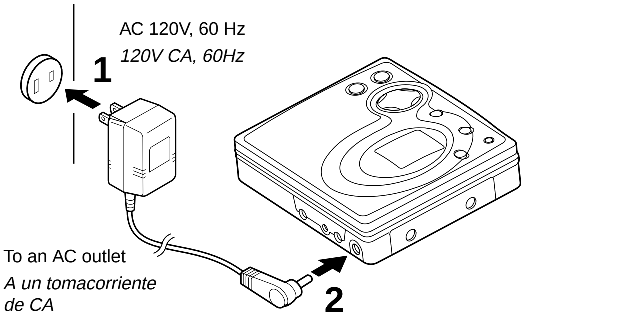
When the operation buttons are pressed, the unit does not respond.
- Is the unit in the hold mode?
- Is the battery exhausted?
- Is the earphones plug inserted firmly?

Some sounds are skipped.
- Is the battery exhausted?
- Is the unit being subjected to excessive vibration?

The MiniDisc cannot be ejected.
- Has the track number or character information been written on the disc yet?
- Is the unit in the recording or editing mode?

Recording and editing are impossible.
- Is the MiniDisc protected against accidental erasure?
- Is the unit connected properly to the other equipment?
- Is the AC adaptor unplugged or did a power failure occur when recording or editing?
- Is the unit in the hold mode?
- Is an optical signal being output from the stereo system? Read the operation manual for the stereo system.

1 Connect the AC adaptor
Conecte el adaptador de CA

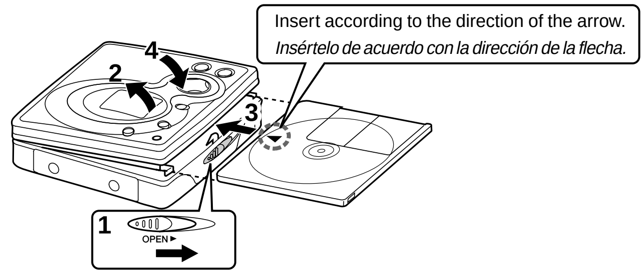


1 Plug the AC adaptor into the AC outlet.
Enchufe el adaptador de CA en el tomacorriente de CA.

2 Insert the plug on the other end into the DC IN 5V jack.
Inserte la clavija del otro extremo en la toma DC IN 5V.

Before using the unit with a rechargeable battery, the battery has to be charged.
Antes de emplear el aparato con una batería recargable, se deberá cargar la batería.

2 Inserting a MiniDisc
Inserción de un minidisco

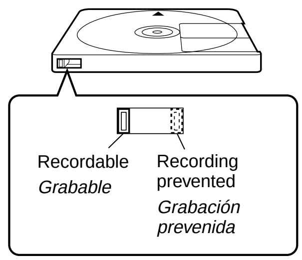


1 Slide the OPEN lever to release the compartment door.
Deslice la palanca OPEN para abrir la puerta del compartimiento.

2 Lift it up.
Levántela.

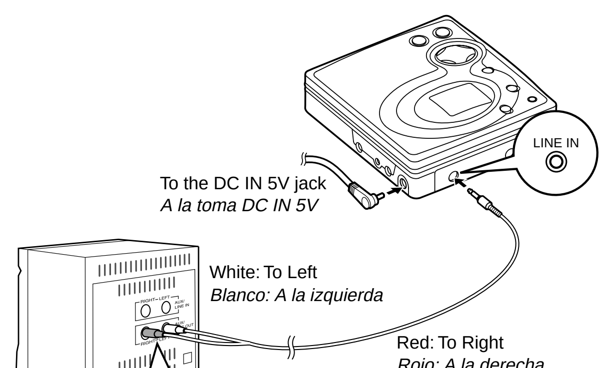
3 Insert a MiniDisc as shown.
Inserte un minidisco como se muestra.

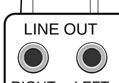
4 Close the compartment door.
Cierre la puerta del compartimiento.



When you record on a MiniDisc, check that the erase prevention tab is set to the “Recordable” position.
Cuando grabe en un MD, compruebe que la lengüeta de prevención contra borrado esté puesta en la posición "Grabable".

3 Connections / *Conexiones*



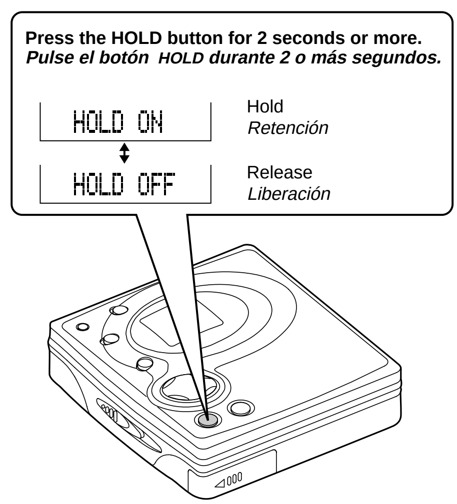


To a stereo system with “LINE OUT” or “AUDIO OUT” jacks.
Note:
If the audio system has only one pair of jacks then they are usually for input only and recording via this connection is not possible.

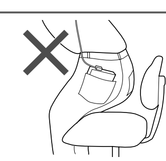
Para un sistema estéreo con tomas "LINE OUT" o "AUDIO OUT" .
Nota:
Si el sistema de audio tiene sólo un par de tomas, son usualmente sólo para entrada y no puede realizarse la grabación mediante esta conexión.

Preparation for use
Preparación para su utilización

The unit does not work if the unit is in the hold mode.
El aparato no funciona si está en el modo de retención.

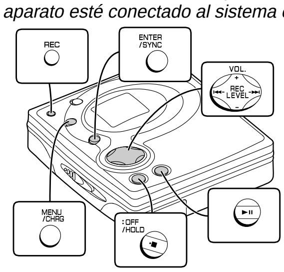


CAUTION:
It is not recommendable to put the MiniDisc into a rear pocket, as this may damage the product when sitting.
PRECAUCIÓN:
No es recomendable poner el MD en un bolsillo trasero, porque esto podría dañar el producto al sentarse.



Recording / *Grabación*

Check that the unit is connected to the stereo system.
Compruebe que el aparato esté conectado al sistema estéreo.

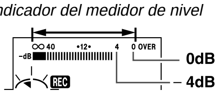


1 **Press the REC button.**
Pulse el botón REC.

2 **Begin playback on the stereo system connected to this portable MD.**
Inicie la reproducción en el sistema estéreo conectado a este MD portátil.

3 **Press the REC LEVEL ⏮ or ⏭ button to adjust the recording level.**
Adjust the recording level so that the maximum sound volume from the source makes the reading swing somewhere between –4 dB and 0 dB.
Pulse el botón REC LEVEL ⏮ o ⏭ para ajustar el nivel de grabación.
Ajuste el nivel de grabación de modo que el nivel máximo de volumen del sonido de la fuente haga que la indicación oscile entre –4 dB y 0 dB.

Level meter indicator
Indicador del medidor de nivel



This unit can adjust the digital recording level just the same as the analog recording.
Este aparato puede ajustar el nivel de grabación digital del mismo mode que en el caso de la grabación analógica.

4 **Press the PAUSE button on the stereo system to enter the playback pause mode.**
Here you can search for the track to record.
Pulse el botón PAUSE del sistema estéreo para establecer el modo de pausa de reproducción.
Aquí podrá buscar la pista a grabarse.

5 **Press the MENU/CHRG button repeatedly to select the "REC MODE".**
Pulse repetidamente el botón MENU/CHRG para seleccionar "REC MODE".

6 **Press the ENTER/SYNC button.**
Pulse el botón ENTER/SYNC.

7 **Press the MENU/CHRG button repeatedly to select recording mode.**
Pulse repetidamente el botón MENU/CHRG para seleccionar el mode de grabación.

8 **Press the ENTER/SYNC button.**
The mode will be set automatically after 7 seconds even if the ENTER/SYNC button is not pressed.
Pulse el botón ENTER/SYNC.
El mode se establecerá automáticamente después de 7 segundos aunque no se pulse el botón ENTER/SYNC.

9 **Press the ▶❚❚ button to start the MiniDisc unit recording.**
Pulse el botón ▶❚❚ para iniciar la grabación del aparato de MD.

10 **Begin playback on the stereo system, and the output will be recorded.**
Inicie la reproducción en el sistema estéreo, y se grabará la salida.

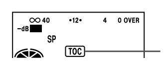
To stop recording

Press the ■:OFF/HOLD button.

When "TOC" appears, the MiniDisc recorded contents have not yet been updated.

Para detener la grabación

Pulse el botón ■:OFF/HOLD.
Mientras aparece "TOC", aún no se habrá actualizado el contenido grabado en el MD.



TOC display
Visualización TOC

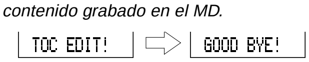
To update the recorded contents of the MiniDisc

Press the ■:OFF/HOLD button when in the stop mode.

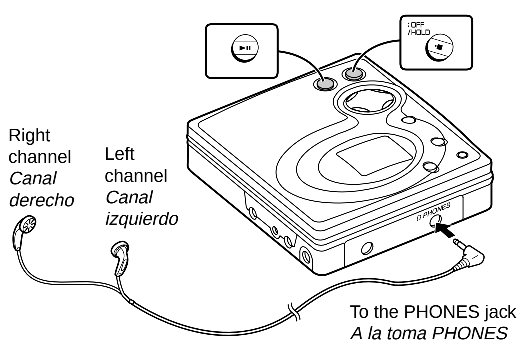
The power turns off after recorded contents have been updated on the MiniDisc.

Para actualizar el contenido grabado del MD

Pulse el botón ■:OFF/HOLD mientras esté en el modo de parada.
La alimentación se desconectará después de haber actualizado el contenido grabado en el MD.



Playback / *Reproducción*



1 **Insert the earphones plug into the PHONES jack.**
Inserte la clavija de los auriculares en la toma PHONES.

2 **Insert a MiniDisc.**
Inserte un MD.

3 **Press the ▶❚❚ button.**
Playback starts automatically with a playback only MiniDisc or a MiniDisc which is protected against accidental erasure (Auto-play function).
Pulse el botón ▶❚❚.
La reproducción empezará automáticamente con un MD de sólo reproducción o un MD que está protegido contra borrado accidental (Función de reproducción automática).

To stop playback

Press the ■:OFF/HOLD button.

If the unit is not operated for at least 2 minutes when in the stop mode, the power will shut off automatically.

Para detener la reproducción

Pulse el botón ■:OFF/HOLD.
Si el aparato no se utiliza durante un mínimo de 2 minutos en el modo de parada, la alimentación se desconectará automáticamente.

DISASSEMBLY

Cares before disassembling

When assembling the machine after disassembling or repair, observe the following requirements so as to ensure safety and performance.

1. Remove the batteries from the machine, and take out the mini-disc.
2. When assembling after repair, be sure to position the wires in the same location.
   Use the specified screws to fix the cabinet and the mechanism unit. The use of the screws with length other than specified may cause contact with the mechanism unit resulting in malfunction.
3. When repairing, pay close attention so not to damage the IC from static electricity.

STEP	REMOVAL	PROCEDURE	FIGURE
1	Bottom Cabinet	1. Screw .... (A1) x5 2. Open the Battery Door. 3. Hook .... (A2) x1	9-1
2	Top Cabinet	1. Open the Top cabinet. 2. Screw .... (B1) x2 3. Flexible PWB .... (B2) x2	9-1 9-2
3	Main PWB	1. Screw .... (C1) x3 2. Flexible PWB .... (C2) x2 3. Hook .... (C3) x3	9-2
4	Mechanism Unit	1. Screw .... (D1) x2	9-3

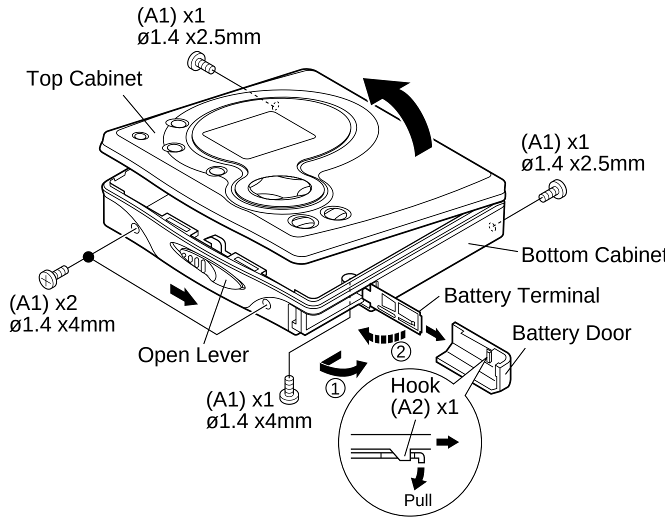
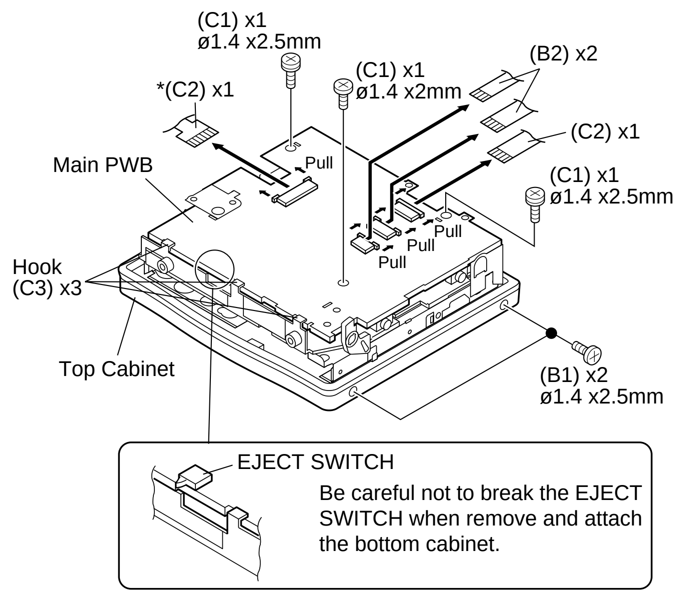


Figure 9-1



Caution:
Carefully handle the main PWB and flexible PWB. After removing the flexible PWB (*) for the optical pickup from the connector, do not touch directly the front end of flexible PWB with your hand so as to prevent damage of optical pickup by static electricity.

Figure 9-2

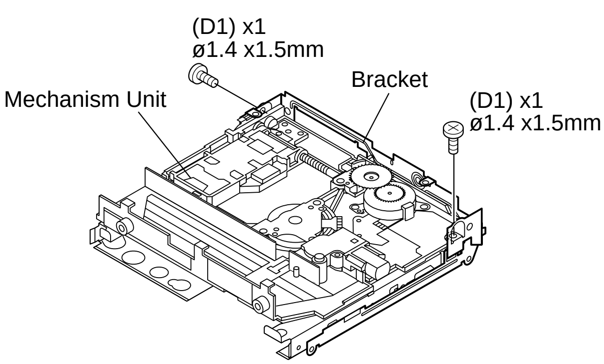


Figure 9-3

REMOVING AND REINSTALLING THE MAIN PARTS

Remove the mechanism according to the disassembling methods 1 to 4. (See Page 9.)

How to remove the magnetic head (See Fig. 10-1.)

1. Remove the solder joints (A1) x 2 of the head flexible plate.
2. Remove the screws (A2) x 2 pcs. of the magnetic head.

Note:
Mount carefully so as not to damage the magnetic head.

How to remove the spindle motor (See Fig. 10-2.)

1. Remove the solder joints (B1) x 4 of flexible PWB.
2. Remove the screws (B2) x 3 pcs., and remove the spindle motor.

How to remove the sled motor (See Fig. 10-3.)

1. Remove the stop washer (C1) x 1 pc., and remove the drive gear (C2) x 1 pc.
2. Remove the solder joints (C3) x 3 of flexible PWB.
3. Remove the screws (C4) x 2 pcs., and remove the sled motor and the left bracket.
4. Remove the screw (C5) x 1 pc., and remove the right bracket.

Note:
Take care so that the motor gear is not damaged.
(If the gear is damaged, noise is caused.)

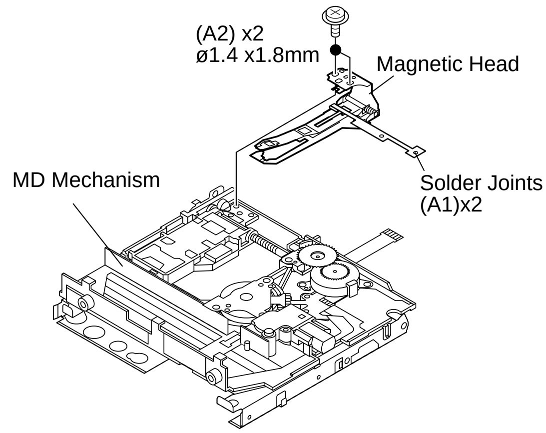


Figure 10-1

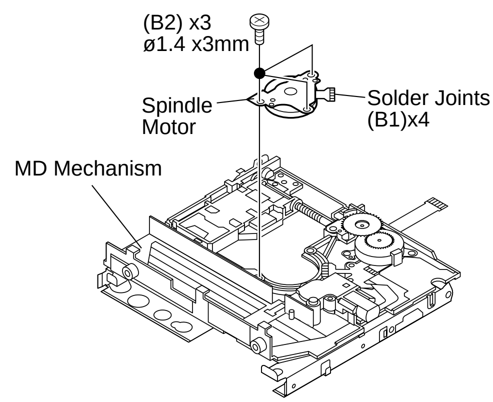


Figure 10-2

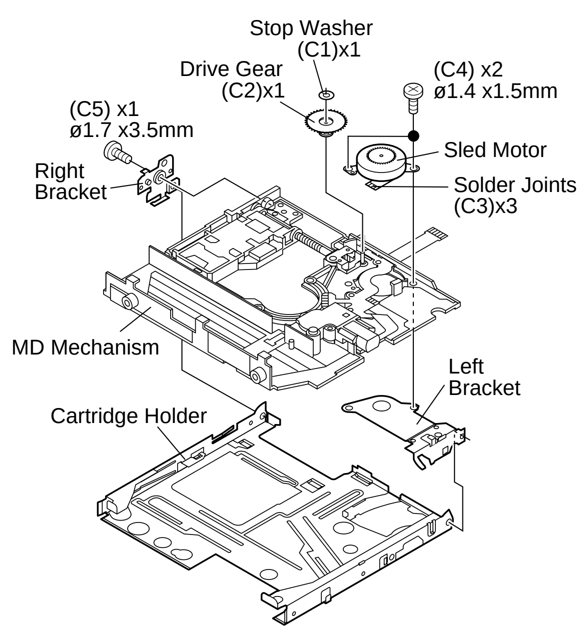


Figure 10-3

How to remove the Lift motor (See Fig. 11-1.)

1. Remove the solder joints (D1) x 2 of the lift motor lead wire.
2. Remove the screw (D2) x 1 pc., and remove the lift motor.

Note:
Take care so that the motor gear is not damaged.
(If the gear is damaged, noise is caused.)

How to reinstall the optical pickup (See Fig. 11-2.)

1. Remove the screw (E1) x 1 pc., and remove the spring.
2. Slowly raise the optical pickup.

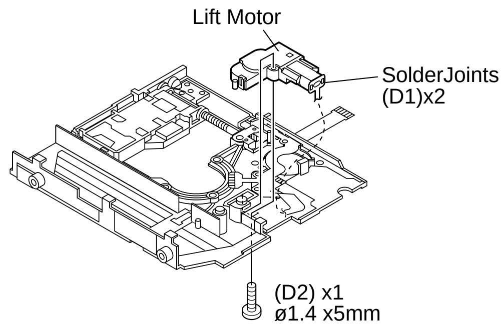


Figure 11-1

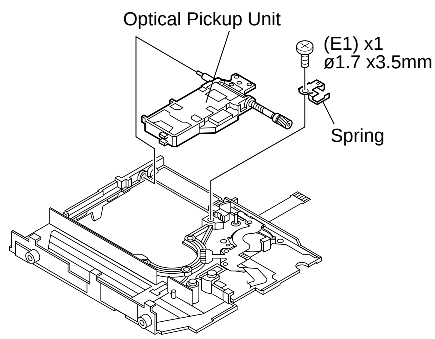


Figure 11-2

ADJUSTMENT

● Test disc

MD adjustment needs two types of disc, namely recording disc (low reflection disc) and playback-only disc (high reflection disc).

	Type	Test disc	Parts No.
1	High reflection disc	MMD-110 (TEAC Test MD)	88GMMD-110
2	Low reflection disc	MMD-212 (TEAC Test MD) 74-minute disc	88GMMD-212
3	Low reflection disc	MMD-213A (TEAC Test MD) 80-minute disc	88GMMD-213A
4	Low reflection disc	Recording minidisc	UDSKM0001AFZZ

Note: Use the low reflection disc on which music has been recorded.

● Entering the TEST mode

1. Setting at port (power nonconnected state)

(1) Set the port as follows.
TEST1 : "Low" (TP416)
TEST0 : "High"
(2) Turn the Power ON.
(3) Test Mode START [T E S T _]

2. Setting by special button operation (in standby state)

(1) Holding down the MENU button and ENTER button, press the PLAY ► button.
(2) Normal mode setting initialization (BASS setting, VOL setting, etc.)
*Since the unit is changed to the setting for production line inspection , be sure to set it to the default setting state in the following default setting procedure before returning it to the user.
(3) Test Mode START [T E S T _]
(4) When the VOL.**+** button is pressed, indication of microcomputer version for one second [Y 1 2 A c X]

Microcomputer version: Y 1 2 A
EEPROM version: c
Destination: X

(5) When the VOL.**–** button is pressed, whole LCD lighting for 2 seconds

● Leaving the TEST mode

(1) Press the STOP ■ button in the TEST mode stop state.

● Shipping setting method

Holding down simultaneously the VOLUME **–** Button and PLAY ► Button of the set unit without disc, supply the power from the DC IN plug. After the indication "INIT" -> "BYE OK" disappears, release the power supply of DC IN.

● Test Mode

Mode	Description
1. AUTO 1 Mode	• Perform preliminary automatic adjustment. • If the combination of mechanism and pickup PWB has been changed, be sure to start from AUTO1.
2. AUTO 2 Mode	• Perform ATT (attenuator) automatic adjustment. • Perform continuous playback (error rate display, jump test)
3. TEST-PLAY Mode	• Continuous playback from the specified address is performed. • 1 line, 10 lines or 384 lines manual jump is performed. • C1 error rate display (pit section), ADIP error rate display (groove section) • The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous playback.
4. TEST-REC Mode	• Continuous record from the specified address is performed. • Change of record laser output(servo gain is also changed according to laser output). • The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous recording.
5. MANUAL 1 Mode	• Temperature is displayed. (Updating in real time) • Seeing the displayed adjustment value, perform preliminary manual adjustment. (Error rate indication, jump test)
6. MANUAL 2 Mode	• Temperature is displayed. (Updating in real time) • Seeing the displayed adjustment value perform manfully the preliminary adjustment. (Error rate indication, jump test) • Continuous playback is performed (Error rate display, jump test).
7. RESULT 1 Mode	• The value adjusted in AUTO1 or MANUAL1 is indicated. • (Execution in servo "OFF" state").
8. RESULT 2 Mode	• The value adjusted in AUTO 2 or MANUAL 2 is indicated. • Adjustment value is changed manually. (Error rate display, jump test).
9. DIGITAL INPUT Mode	• Digital input information is displayed.
10. ERROR INFORMATION Mode	• Error information is displayed. • Error information is initialized
11. NORMAL Mode	• The mode is changed from the TEST mode to the normal mode without adjustment. • In the normal mode the internal operation mode, memory capacity, etc. areindicated. • In the normal mode both temperature correction and posture correction are perfomed.
12. EEPROM Mode	• Factors of digital servo are changed manually. (Each servo is turned on individually.) • Cut-off frequency of BASS1, BASS2 and BASS3 is selected manually. • Temperature detection terminal voltage is measured, and the reference value is set. • Defaults are selected and set. • Setting of EEPROM protect area is updated. (In case of protect releasing)
13.AUTO J Mode	• AUTO 1/2, focus balance adjustment, TEST-PLAY (ADIP/C1 error check), EEPROM are updated sequentially.

● Operation in each TEST mode

1. AUTO1 Mode

- When the STOP ■ button is pressed while the AUTO1 menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- Be sure to adjust, using the specified disc MMD-213A or MMD-212.
  At this time release the EEPROM (IC402) protection. (Refer to EEPROM write procedure.)
- Adjustment NG; Adjustment item out of range, focus ON failure, and adjustment error
- When the PLAY ► button is pressed while ADJ. OK is displayed, AUTO2 is executed.

2. AUTO2 Mode

- When the STOP ■ button is pressed while the AUTO2 menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- Adjustment NG; Adjustment item out of range, and adjustment error.
- When the PLAY ► button is pressed while ADJ. OK is displayed, TEST_PLAY is executed.

3. TEST-PLAY Mode

- When the STOP ■ button is pressed while the TEST-PLAY menu appears, or in TEST-PLAY or continuous playback mode, the mode changes to the TEST mode stop state.
- When the PLAY ► button is pressed while the TEST-PLAY menu appears, continuous playback is initiated from the current pickup position.
- Whenever the MENU button is pressed in the TEST-PLAY menu, the target address changes as follows.
  0032 → 03C0 → 0700 → 08A0 → 0950 → 0032 → ....
  When the PLAY ► button is pressed while a target address is displayed, continuous playback is performed after searching that address.
- Each time the ENTER button is pressed while the TEST-PLAY mode target address is displayed, the digit which is changed by pressing the FAST FORWARD/FAST REVERSE ►►I / I◄◄ button is changed as follows.
  003<u>2</u> → 00<u>3</u>2 → 0<u>0</u>32 → 003<u>2</u> → ....
- When the FAST FORWARD ►►I button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the ENTER button is set to +1h. (0 to F)
- When the FAST REVERSE I◄◄ button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the ENTER button is set to -1h. (0 to F)
  * When the FAST FORWARD/FAST REVERSE ►►I / I◄◄ button is held down, the setting changes continuously, one cycle being 100 ms.
- When the BASS button is pressed in the continuous playback mode, the number of jump lines changes as follows.
  1 → 10 → 384 → 1 →........
  * After the number of jump lines is indicated for one second, the address indication is restored [▲▲▲ T R _]
- When the FAST FORWARD ►►I button is pressed in the continuous playback mode, the specified number of lines is jumped in the FWD direction.
- When the FAST REVERSE I◄◄ button is pressed in the continuous playback mode, the specified number of lines is jumped in the REV direction.
  * When the FAST FORWARD/FAST REVERSE ►►I / I◄◄ button is held down, jump is repeated every approx. 100 ms.
- Whenever the MENU button is pressed in the continuous playback mode, the indication changes as follows.
  * Pre-mastered disc
    Continuous playback (SUBQ address indication) [S Q □□□□]
    ↓
    Continuous playback (C1 error indication) [C E ☆☆☆☆]
    ↓
    Continuous playback (SUBQ address indication) [S Q □□□□]
  * Recordabl disc
    Continuous playback (ADIP address indication) [A P □□□□]
    ↓
    Continuous playback (C1 error indication) [C E ☆☆☆☆]
    ↓
    Continuous playback (ADIP error indication) [A E ★★★★]
    ↓
    Continuous playback (ADIP address indication) [A P □□□□]

4. TEST-REC Mode

- When the STOP ■ button is pressed while the TEST-REC menu appears, or in the TEST-REC mode or continuous record mode, the mode changes to the TEST mode stop state.
- When the PLAY ► button is pressed while the TEST-REC menu appears, the continuous record is initiated from the current pickup position.
- Whenever the MENU button is pressed in the TEST-REC menu, the target address changes as follows.
  0032 → 03C0 → 0700 → 08A0 → 0950 → 0032 → ....
  When the PLAY ► button is pressed while a target address is displayed, continuous playback is performed after searching that address.
- Whenever the ENTER button is pressed in the TEST-REC mode target address is displayed, the digit which is changed by the FAST FORWARD/FAST REVERSE ►►I / I◄◄ button changes as follows.
  003<u>2</u> → 00<u>3</u>2 → 0<u>0</u>32 → <u>0</u>320 → ....
- When the FAST FORWARD ►►I button Is pressed in the TEST-REC mode target address is displayed, the digit of address specified by the BASS button is set to +1h.(0 to F)
- When the FAST REVERSE I◄◄ button is pressed in the TEST-REC mode target address is displayed, the digit of address specified by the BASS button is set to -1h.(0 to F)
  * When the FAST FORWARD/FAST REVERSE ►►I / I◄◄ button is held down, the setting changes continuously, one cycle being 100 ms.

5. NORMAL Mode

- When the STOP ■ button is pressed while the NORMAL menu appears, the mode changes to the TEST mode stop state.
- Indication during operation
  Indication of memory capacity on main unit LCD
  [□□_ ✳✳✳✳_✳✳] + Level meter
  □□ : Internal mode
  ✳✳✳✳ : Address (Cluster section)
  ✳✳ : Address (Sector section)
- Selection of sound volume, BASS, etc. is possible (without indication)
- Recording is also possible.
- If the STOP ■ button is pressed during operation in the NORMAL mode, the NORMAL mode is canceled, and the power is turned off.

6. Error data display Mode

- Reversing when FAST REVERSE ⏮ button is pressed
- When the STOP ■ button is pressed while the error data indication menu appears or during error data indication, the mode changes to the TEST mode stop state.
- Error data 0 is the latest error.
- Error which occurred in the TEST mode is also stored in the memory.
- When the MENU button is pressed while the error data indication menu appears, the error data is initialized.
  [C L E A R _]
- ◇◇: Error Code

● Explanation of error history code

13h : Excessive number of retry to draw servo during its adjustment.
16h : COUT detection time over during servo adjustment.
17h : The level of input signal from the RF amplifier is out of the allowable range.
1Fh : Cannot clear the factor of ENDEC DINT.
21h : Cannot focus on the disc.
22h : Cannot start up the spindle.
23h : Track search time over.
32h : Cannot read P-TOC.
42h : Cannot read U-TOC.
44h : Cannot write U-TOC.
45h : Cannot perform write test of U-TOC.
52h : Cannot write SD. (Sound Data)
71h : Time over during initialization of the pickup position.
72h : Check sum error occurred when reading EEPROM.
73h : Cannot operate the recording head (by using the EJECT lever).
91h : The ambient temperature is out of the allowable range.

7. Auto J Mode

- AUTO 1/2, focus balance adjustment, TEST-PLAY (ADIP/C1 error check), EEPROM are updated sequentially.
- If the STOP button is pressed while processed, the same operation as the normal STOP button operation will be performed.

EEPROM (IC402) writing procedure

1. Procedure to replace EEPROM and write initial value of microcomputer in EEPROM

(1) Replace EEPROM.
(2) Refer to the latest EEPROM data list.
(3) Press the MENU button, ENTER button and Play button to start the test mode.
(4) Press the VOL.**+** button, version display

[V e r . ⁎ ⁎ ⁎ ⁎ ⁎ x]

EEPROM version (c ~ z)
Microcomputer ROM version

(5) Press the VOL.**–** button, the whole LCD lights.
(6) Test mode stop state.

[T E S T]

(7) Press the "BASS" button, and press 3 times the "FAST REVERSE ⏮" button.

[E E P R O M]

(8) Perform the operation to display "EEPROM SETTING ENTER CHART", compare the EEPROM DATA LIST with the display, and set according to the EEPROM DATA LIST with the VOL.**+** or VOL.**–** button.
(9) Set the temperature reference. (Refer to the Temperature Reference Setting Method.)
(10) Set according to the EEPROM DATA LIST.
(11) Press the Stop ■ button.

[T E S T]

(12) Press the Stop ■ button.
(13) After data is written in EEPROM, turn off power .
(14) Restore protection of EEPROM.

2. Temperature reference setting method

[1] Measurement, calculation and setting procedure

(1) Set the TEST mode.
- Set TEST 1, 0 = '01', and turn on power (or set PLAY ON in standby state).

(2) Press the MENU button, ENTER button and Play button to start the test mode.
(3) Start the EEPROM mode 'Temp' menu.
- Button operation in order of BASS, FAST REVERSE ⏮ x 3 times, PLAY ►, PLAY ► in the test mode STOP state.
- 'TM§§◯◯' is displayed. (§§= Temperature code, ◯◯ = Temperature reference)

(4) Once press FAST FORWARD ⏭, and determine the displayed microcomputer TEMP input AD value.
- 'TPin##' is displayed. (## = TEMP input AD value)

(5) At the ambient temperature, determine the temperature corrected value from the temperature measurement value correction table.
(6) Determine the temperature reference, using the following formula.
- Temperature reference = Microcomputer TEMP input AD value + Temperature corrected value

(7) Set the temperature reference value by button operation, and check whether the temperature code indication corresponds to "Temperature Code Identification Table".

[2] Temperature measurement value correction table

Ambient temperature	Temperature correction	Center temperature
+ 9°C ~ +11°C	- 05h	+ 10.0°C
+12°C ~ +14°C	- 04h	+ 12.7°C
+15°C ~ +16°C	- 03h	+ 15.4°C
+17°C ~ +19°C	- 02h	+ 18.2°C
+20°C ~ +22°C	- 01h	+ 20.9°C
+23°C ~ +24°C	± 00h	+ 23.6°C
+25°C ~ +27°C	+ 01h	+ 26.3°C
+28°C ~ +30°C	+ 02h	+ 29.0°C
+31°C ~ +33°C	+ 03h	+ 31.8°C

[3] Temperature code identification

Ambient temperature	Temperature correction	Center temperature
– 9°C ~ +10°C	08h	+ 0.5°C
+ 3°C ~ +21°C	07h	+ 12.5°C
+15°C ~ +33°C	06h	+ 23.6°C
+26°C ~ +43°C	05h	+ 35.0°C

● EEPROM DATA LIST (EEPROM version c)

TEMP setting

Item display		Set values
T M _ _	○○	Calculate values

Focus setting

Item display		Set values
F G 1 _	○○	40H
F Z H _	○○	EDH
F L n _	○○	09H
F L p _	○○	06H
F T s _	○○	18H
F S B _	○○	40H
F T B _	○○	28H
T O 1 _	○○	50H
T O R _	○○	58H

Tracking setting

Item display		Set values
T G 1 _	○○	14H
T B o _	○○	20H
T B t _	○○	12H
T K o _	○○	20H
T K t _	○○	0DH
T D o _	○○	67H
T D t _	○○	34H
S C t _	○○	3AH
C L p _	○○	24H
C L r _	○○	30H
J P I _	○○	0EH
K 1 0 _	○○	65H
T H P _	○○	02H
T H G _	○○	02H
T O P _	○○	00H
T O G _	○○	F2H
T 1 P _	○○	20H

Spindle setting

Item display		Set values
S P G _	○○	30H
S P i _	○○	9AH
S P m _	○○	62H
S P o _	○○	4FH
S D 1 _	○○	7FH
S D 2 _	○○	7FH
S P K _	○○	EBH
S P W _	○○	0FH
S P B _	○○	66H
S R i _	○○	C0H
S R m _	○○	9AH
S R o _	○○	7BH
S B R _	○○	60H
O S L _	○○	14H
P J G _	○○	46H

Sled setting

Item display		Set values
S K S _	○○	7FH
S K L _	○○	7FH
S L C _	○○	24H
S T L _	○○	07H
S T M _	○○	42H
S T E _	○○	A6H
S D V _	○○	60H
S J P _	○○	03H
W T m _	○○	18H
S R V _	○○	54H
S L T _	○○	5CH
M V S _	○○	0AH
S L S _	○○	28H

Sled setting (Continued)

Item display		Set values
S K E _	○○	0EH
S D E _	○○	1CH
B P E _	○○	71H
B P W _	○○	75H
B P 1 _	○○	33H
B R E _	○○	95H
B R W _	○○	33H
S R S _	○○	3CH

Bass setting

Item display		Set values
B 1 A _	○○	00H
B 2 A _	○○	00H
B 3 A _	○○	00H

ADJ. SET setting

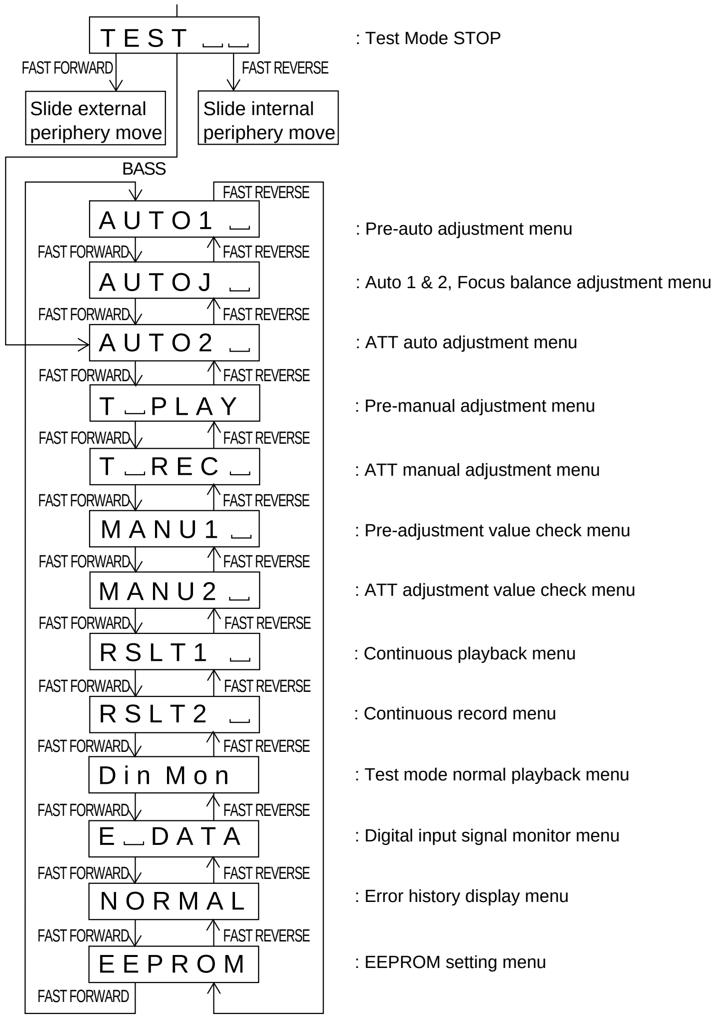
Item display		Set values
C O K _	○○	28H
F A B _	○○	64H
H S G _	○○	11H
L S G _	○○	12H

Control setting

Item display		Set values
C T 0 _	○○	02H
C T 1 _	○○	01H
C T 2 _	○○	32H
C T 3 _	○○	50H
T S A _	○○	20H
U S A _	○○	18H
P L E _	○○	A0H
R C E _	○○	94H
S D F _	○○	1FH
F B 0 _	○○	FCH
B H S _	○○	00H
B S 0 _	○○	17H
B S 1 _	○○	70H
B U 0 _	○○	01H
B D 0 _	○○	05H
B D 1 _	○○	DCH
B M K _	○○	1EH
B E C _	○○	00H
C S T _	○○	69H
I J U _	○○	81H
I J D _	○○	55H
M C T _	○○	A1H
E R C _	○○	5AH
C V 0 _	○○	16H
C V 1 _	○○	10H
S S K _	○○	B9H
A C T _	○○	63H
C 1 E _	○○	52H
A D E _	○○	00H
F G 2 _	○○	70H
T G 2 _	○○	2AH
M F P _	○○	◊◊H
S P M _	○○	◊◊H
M S L _	○○	◊◊H
U S 0 _	○○	◊◊H
U S 1 _	○○	◊◊H
U S 2 _	○○	◊◊H

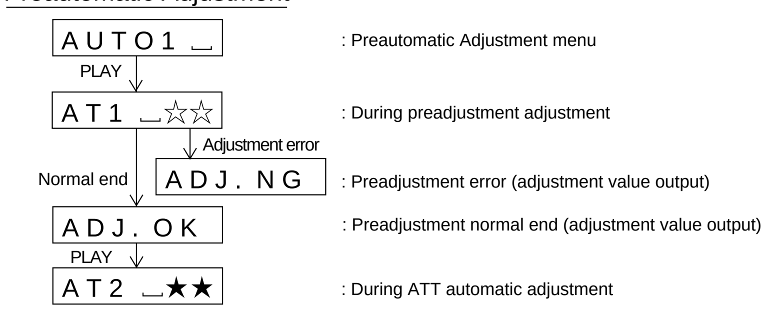
◊◊H : CHECK-SUM

Test Mode Change Chart
Test Mode Menu



* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [PLAY ►] button operation is performed in the specific menu, the operation of this menu is executed.

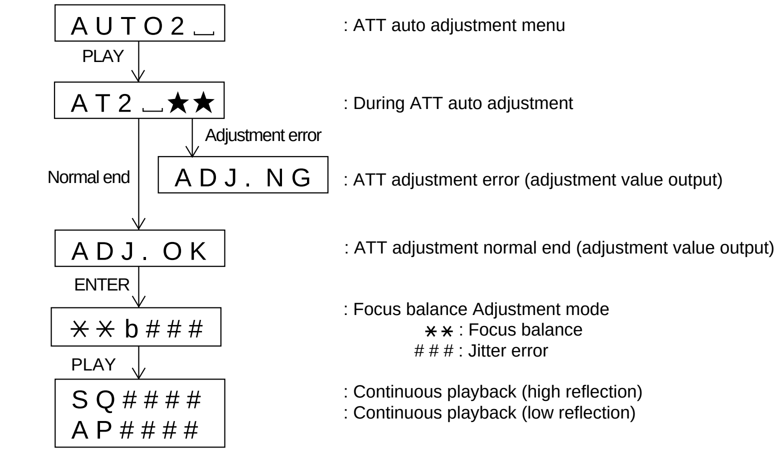
Preautomatic Adjustment



* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* "☆☆" represent the adjustment number as follows.

0 0 : Innermost periphery move
0 2 : ABEF offset tentative measurement
0 4 : RF side focus gain coarse adjustment
0 5 : Focus ATT tentative setting
0 6 : RF side bit section tracking gain adjustment
0 7 : COUT level setting for pit section adjustment
0 8 : External periphery move
0 9 : RF side groove section tracking gain adjustment
1 0 : COUT level setting for groove section adjustment
1 1 : RF side TCRS gain adjustment
1 2 : Tracking ATT initial setting
1 3 : RF side focus gain minor adjustment
1 4 : Focus ATT initial setting
1 5 : S gain "High" ABEF offset measurement
1 6 : TCRS offset measurement
1 7 : S gain "Low" ABEF offset measurement

ATT Auto Adjustment

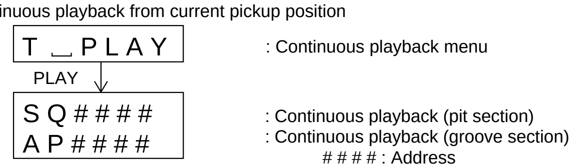


* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* "★★" represent the adjustment number as follows.

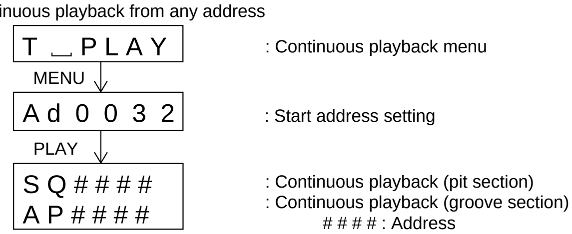
0 0 : Innermost periphery move	
0 3 : Pit section tracking ATT setting	
0 4 : Pit section focus ATT setting	
0 6 : External periphery move	(low reflection only)
0 7 : TCRS ATT setting	(low reflection only)
0 8 : Groove section tracking ATT setting	(low reflection only)
0 9 : Groove section focus ATT setting	(low reflection only)

Continuous Playback

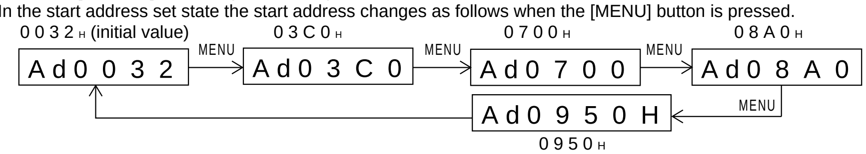
• Continuous playback from current pickup position



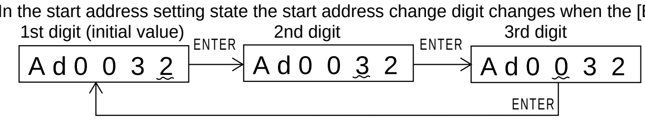
• Continuous playback from any address



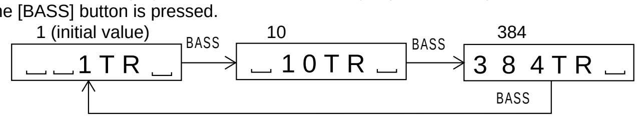
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* In the start address set state the start address changes as follows when the [MENU] button is pressed.



* In the start address setting state the start address change digit changes when the [ENTER] button is pressed.



* In the start address set state the value of selection digit changes in the range of "0h to Fh" when the [FAST FORWARD/REVERSE ►►I / I◄◄] button is pressed.
* In the continuous playback state the number of jump lines changes as follows shown the [BASS] button is pressed.



* When the [FAST FORWARD ►►I] button is pressed in the continued playback mode, jump of specified number of lines occurs in the external periphery direction.
  If the key is held down jump occurs continuously (100 ms cycle).
* When the [FAST REVERSE I◄◄] button is pressed in the continuous playback mode, jump of specified number of lines occurs in the internal periphery direction.
  If the key is held down, jump occurs continuously (100 ms cycle).

Continuous Rrecord

• Continuous record from the current pickup position

T ␣ R E C ␣ : Continuous record menu

↓ PLAY

A P # # # # : Continuous record
#: Address

• Continuous record playback from any address

T ␣ R E C ␣ : Continuous record menu

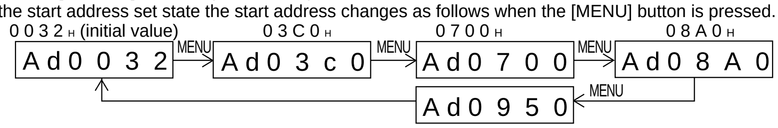
↓ PLAY

A d 0 0 3 2 : Start address setting

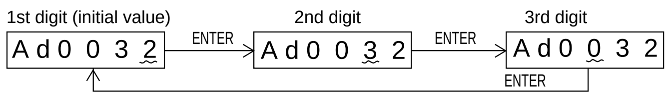
↓ PLAY

A P # # # # : Continuous record
#: Address

* When the [STOP■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* In the start address set state the start address changes as follows when the [MENU] button is pressed.



* In the start address setting state the start address change digit changes when the [ENTER] button is pressed.



Test Mode Normal Playback

N O R M A L : TEST mode normal playback menu

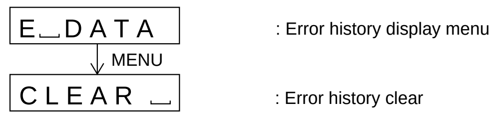
↓ PLAY

@@@@@@ : Continuous playback
@@@@@@: Mode and address display

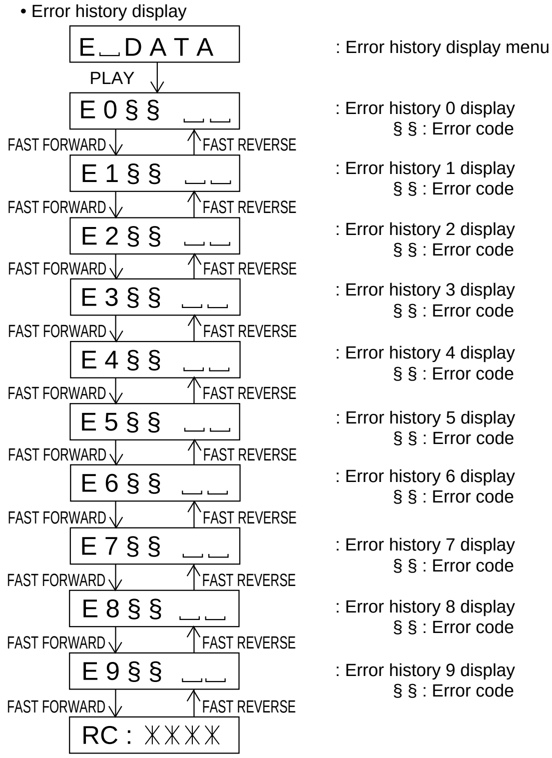
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the NORMAL mode is canceled, the power is turned off.

Error History Display

• Error history clear



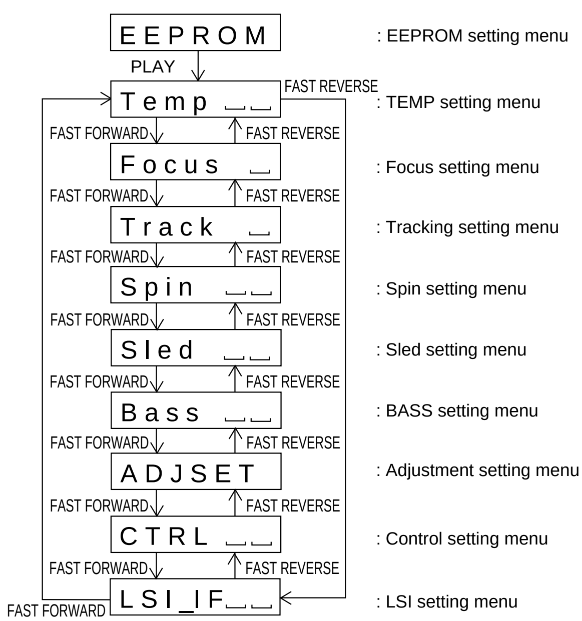
• Error history display



✳✳✳✳ : Total Recording Time

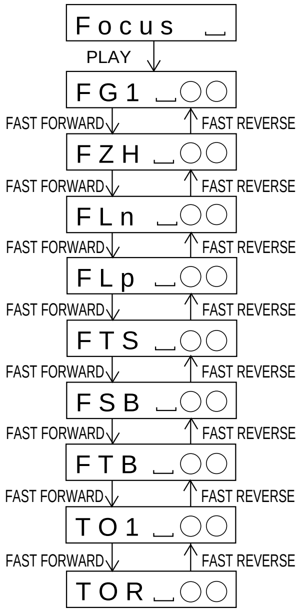
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.

EEPROM Setting



* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [PLAY ►] button operation is performed in the specific state, the specific setting menu is set.

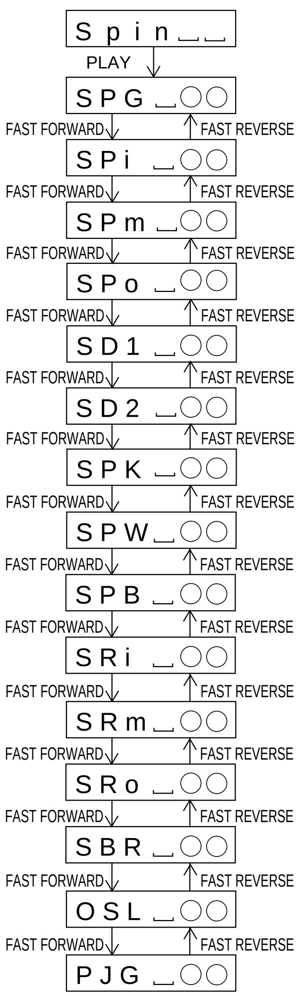
Focus Setting



: Focus setting menu

* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In specific state the setting changed in the range of "00h to FFh" when the [VOL.**+/–**] button is pressed.
  (The upper limit varies depending on the items)
* When the [ENTER] button is pressed in each state, the set digit is changed.

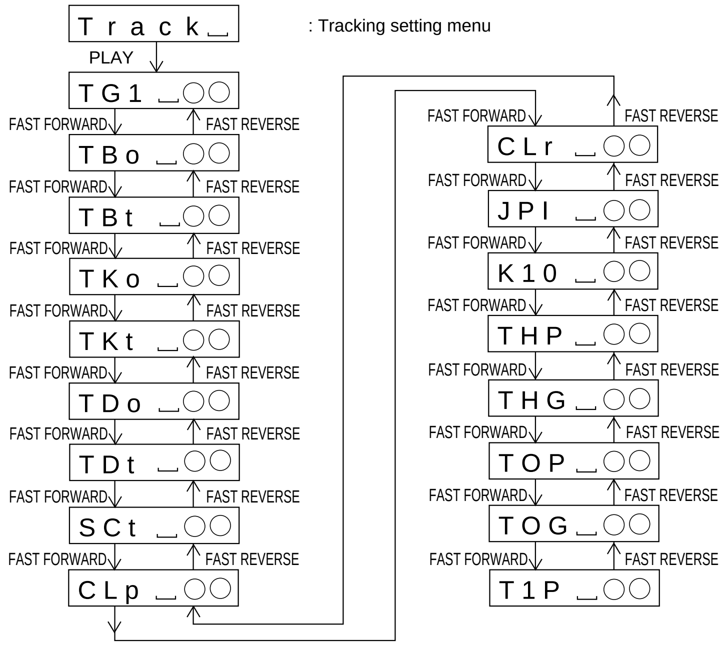
Spin Setting



: Spin setting menu

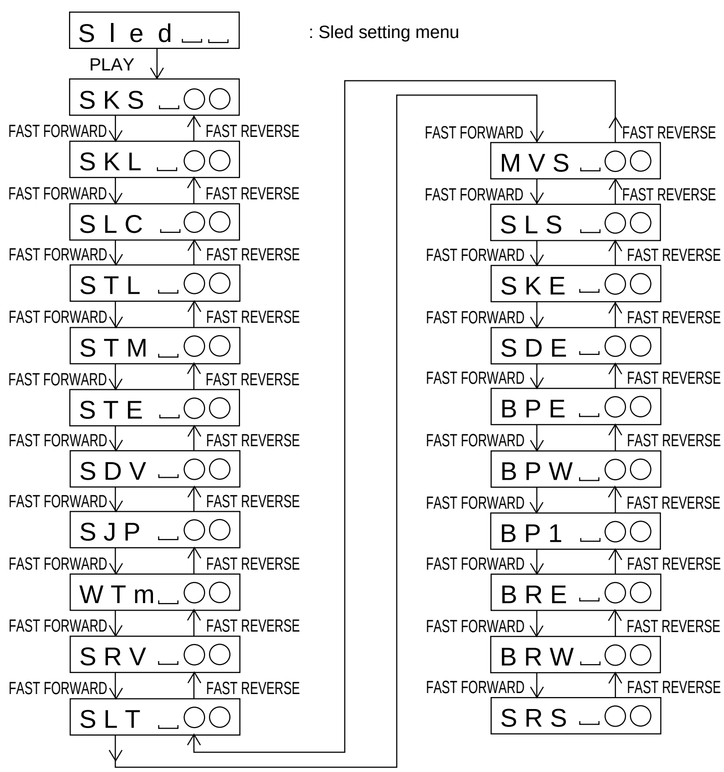
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In specific state the setting changed in the range of "00h to FFh" when the [VOL.**+/–**] button is pressed.
  (The upper limit varies depending on the items)
* When the [ENTER] button is pressed in each state, the set digit is changed.

Tracking Setting



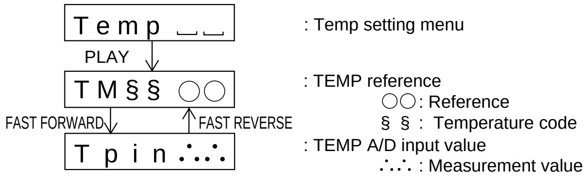
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL.**+**/**–**] button is pressed. (The upper limit varies depending on the items)
* When the [ENTER] button is pressed in each state, the set digit is changed.

Sled Setting



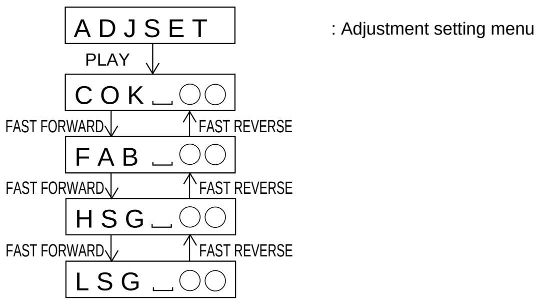
* When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL.**+**/**–**] button is pressed. (The upper limit varies depending on the items)
* When the [ENTER] button is pressed in each state, the set digit is changed.

TEMP Setting

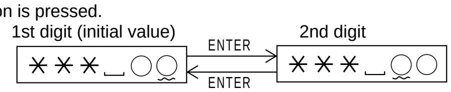


* When the [STOP■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL.+/–] button is pressed.
* When the [ENTER] button is pressed in each state, the set digit is changed.

Adjustment Setting

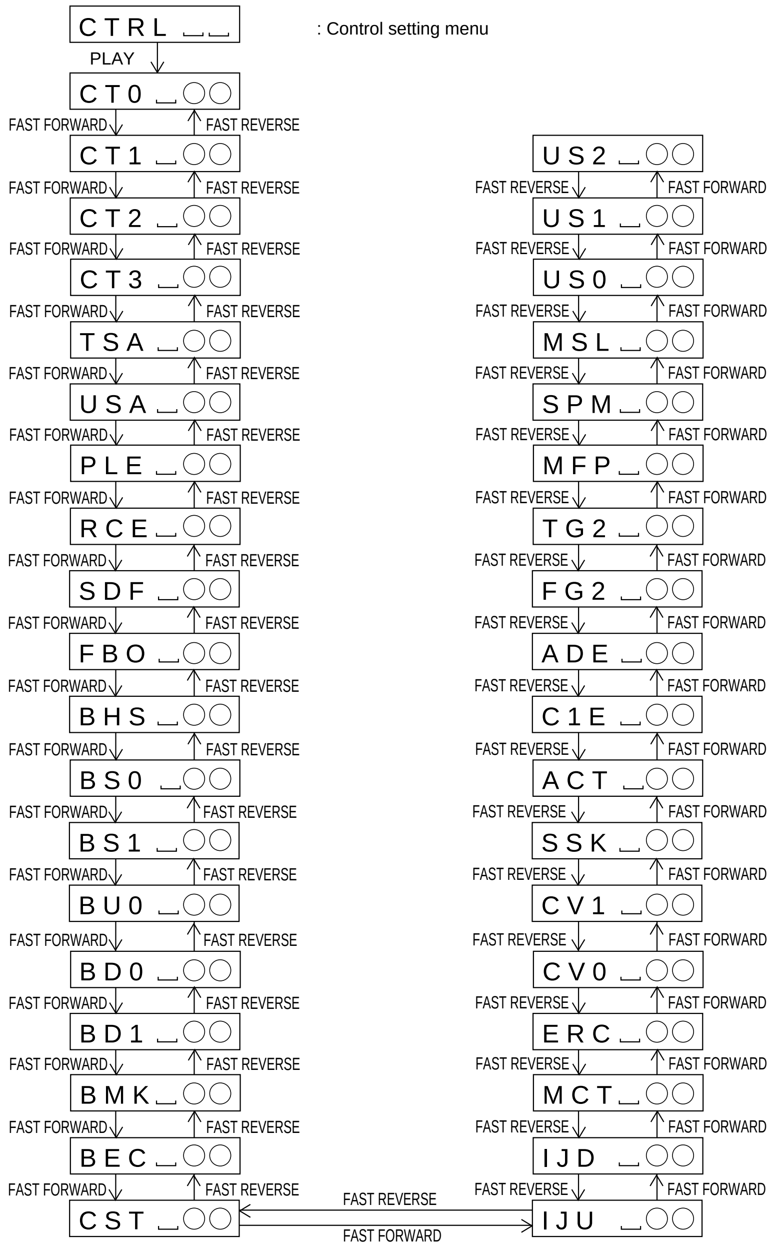


* When the [STOP■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific setting display state the setting change digit changes when the [ENTER] button is pressed.



* In the specific state the setting changes in the range of "0h to Fh" when the [VOL.+/–] button is pressed.
* When the [ENTER] button is pressed in each state, the set digit is changed.

Control Setting



MD ERROR MESSAGE DISPLAY CONTENT LIST

Display content	Error content	Error code	Remarks
Can' t READ*	Readout of the information is not completed.	f: Focus error r: READ ERR s: Search time over w: SD write time over p: Time over at spindle start-up	* indicates the detailed factor.
Can' t READ*	Readout of the TOC information is not completed.		
Can' t READ*	Readout of the U-TOC information is not completed.		
Can't LOCK	The EJECT lever cannot be locked.		
Er-MD41	Judged it abnormal by the U-TOC write test.		
Er-MD80	EEPROM readout Check sum error		
TOC FORM**	Abnormal data DISC detection	L*: UTOC SELECTOR is Loop a_: Address abnormal t_: FTNO > LTNO	* indicates the detailed factor.
NAME FULL	The number of characters for names exceeds the specification limit.		
OPEN	The disc compartment is open.		Open lid is detected while the system is running.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type

- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
- Parts marked with “⚠” (▭▭▭) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW401	EJECT	OFF—ON
SW403	LID OPEN	OFF—ON
SW601	DISC PROTECT	OFF—ON

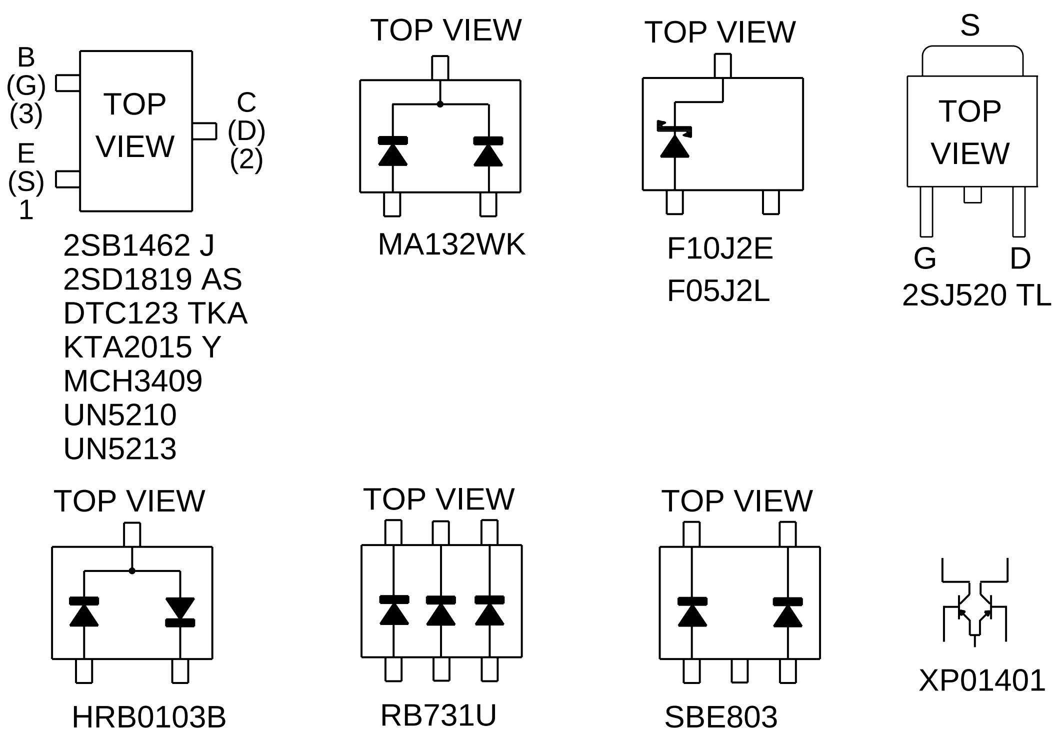


Figure 26 TYPES OF TRANSISTOR AND DIODE

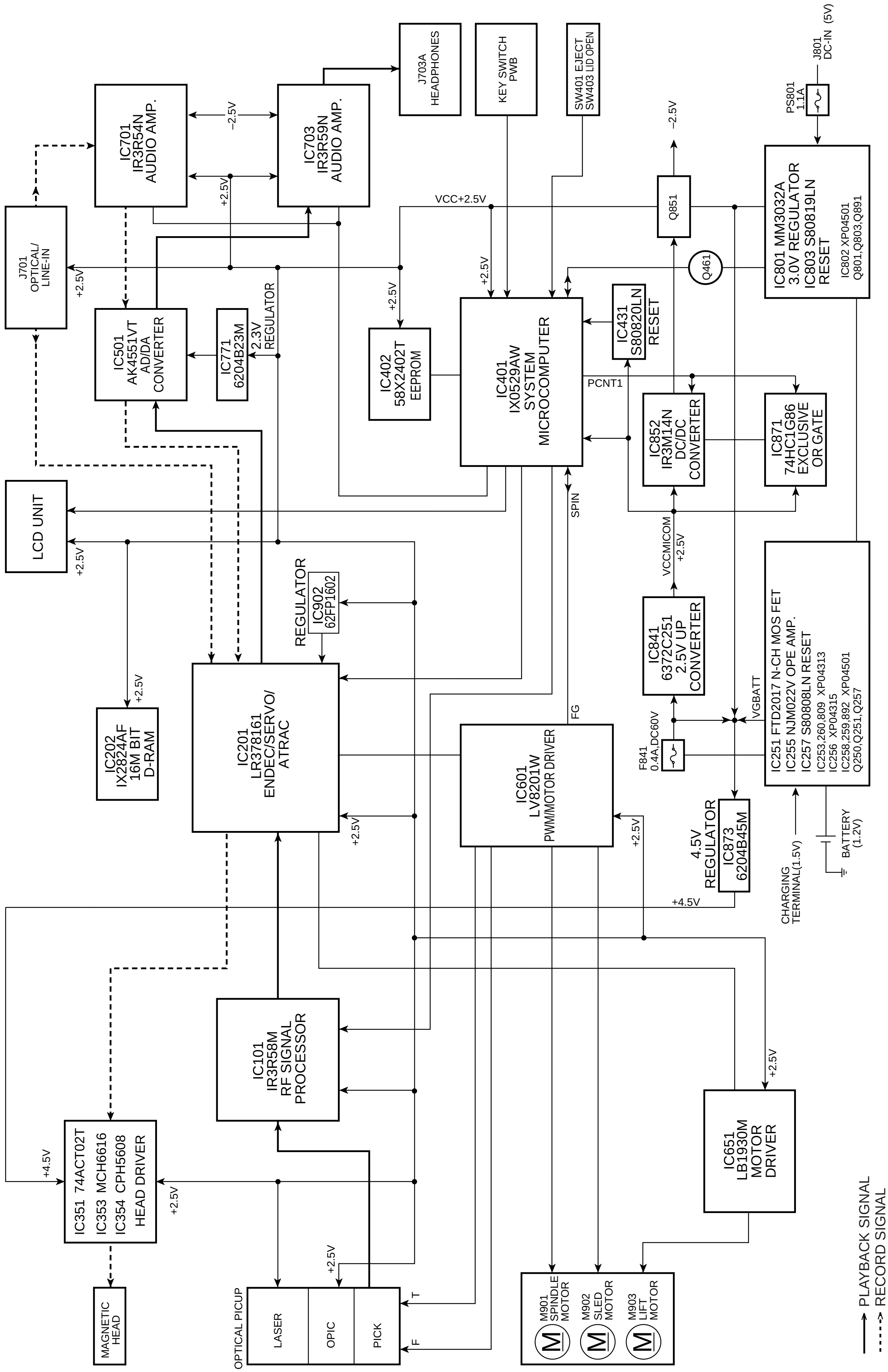
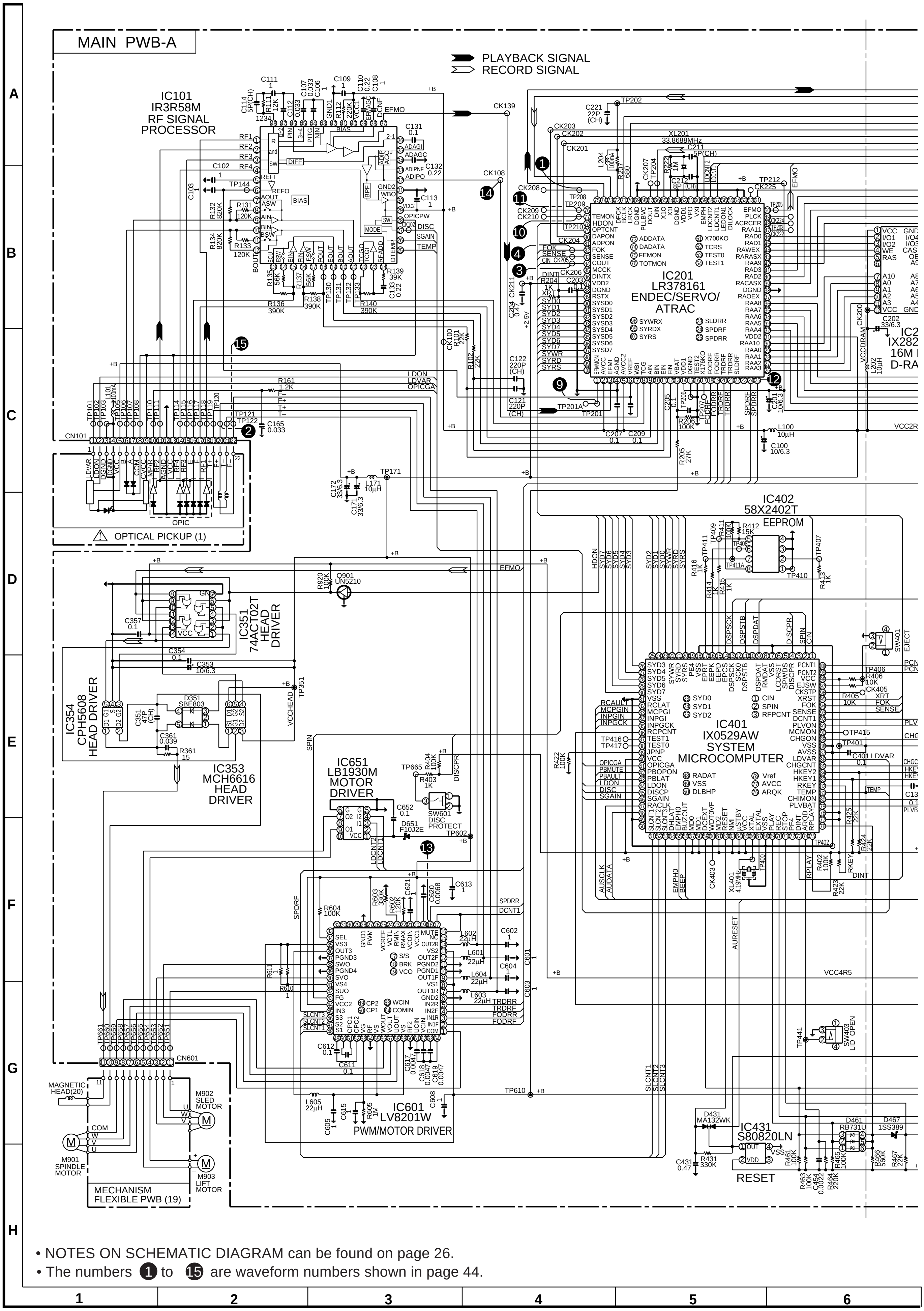


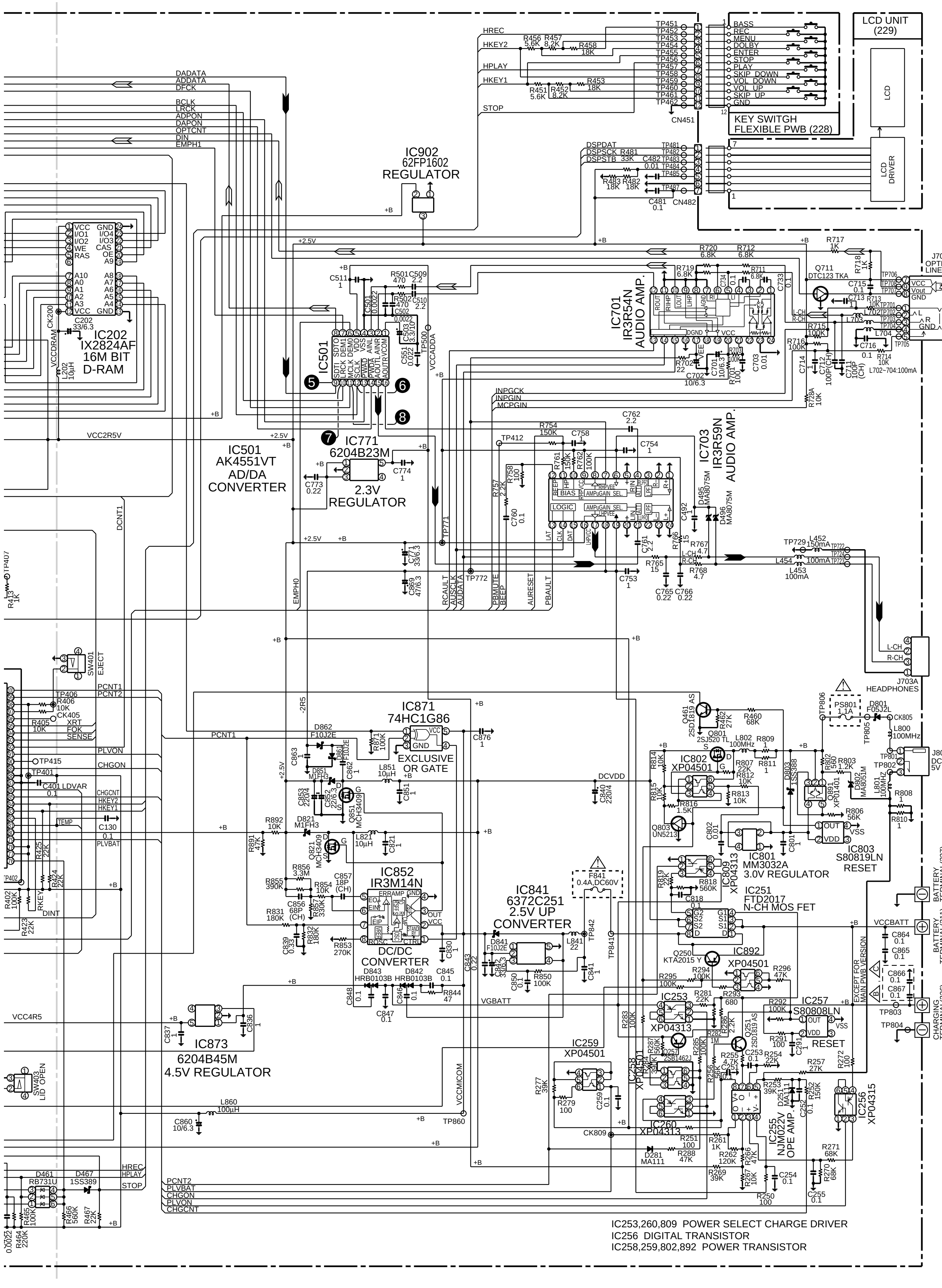
Figure 27 BLOCK DIAGRAM



• NOTES ON SCHEMATIC DIAGRAM can be found on page 26.

• The numbers ❶ to ⓯ are waveform numbers shown in page 44.

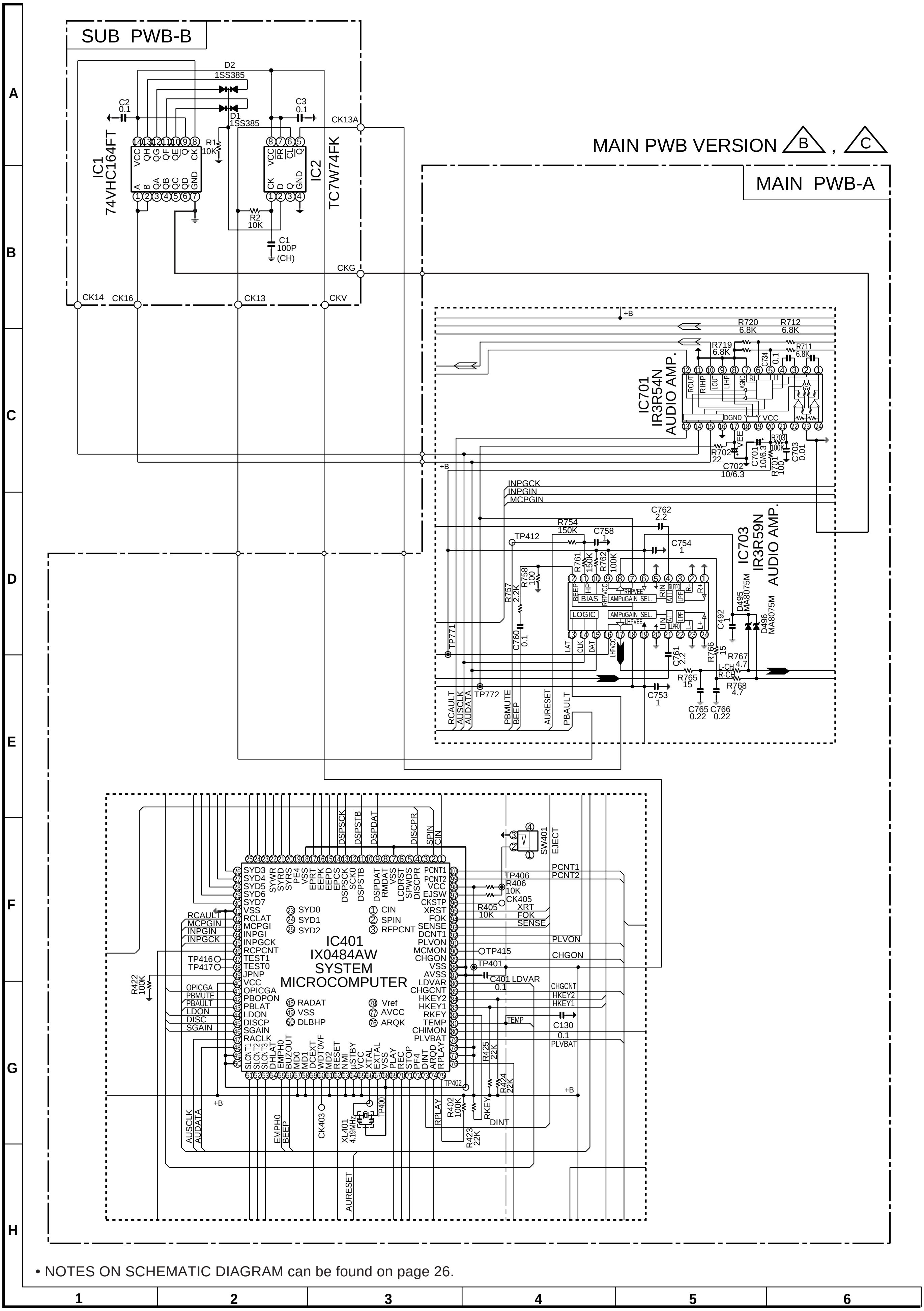
Figure 28 SCHEMATIC DIAGRAM (1/4)



IC253,260,809 POWER SELECT CHARGE DRIVER
IC256 DIGITAL TRANSISTOR
IC258,259,802,892 POWER TRANSISTOR

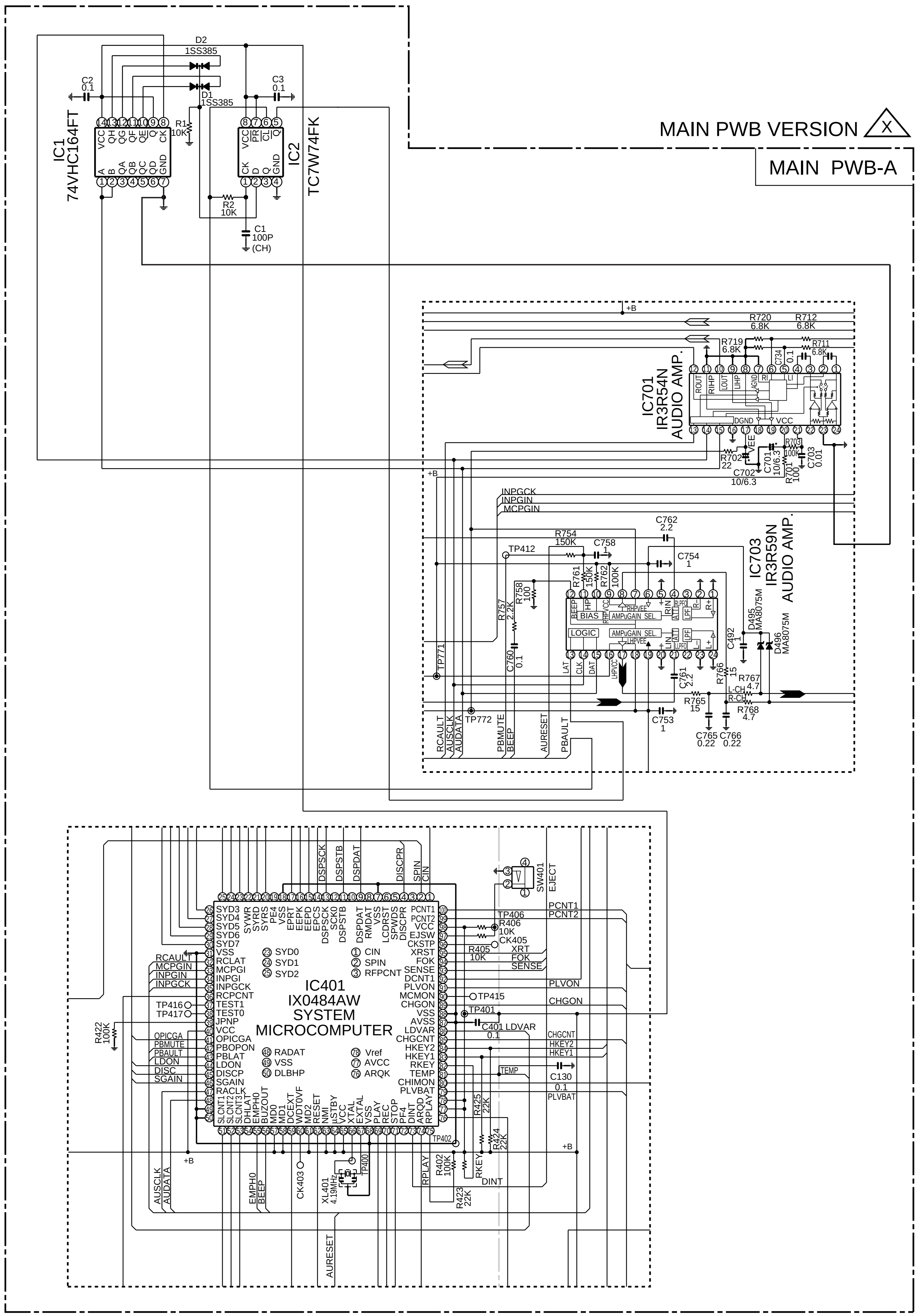
7	8	9	10	11	12

Figure 29 SCHEMATIC DIAGRAM (2/4)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 26.

Figure 30 SCHEMATIC DIAGRAM (3/4)



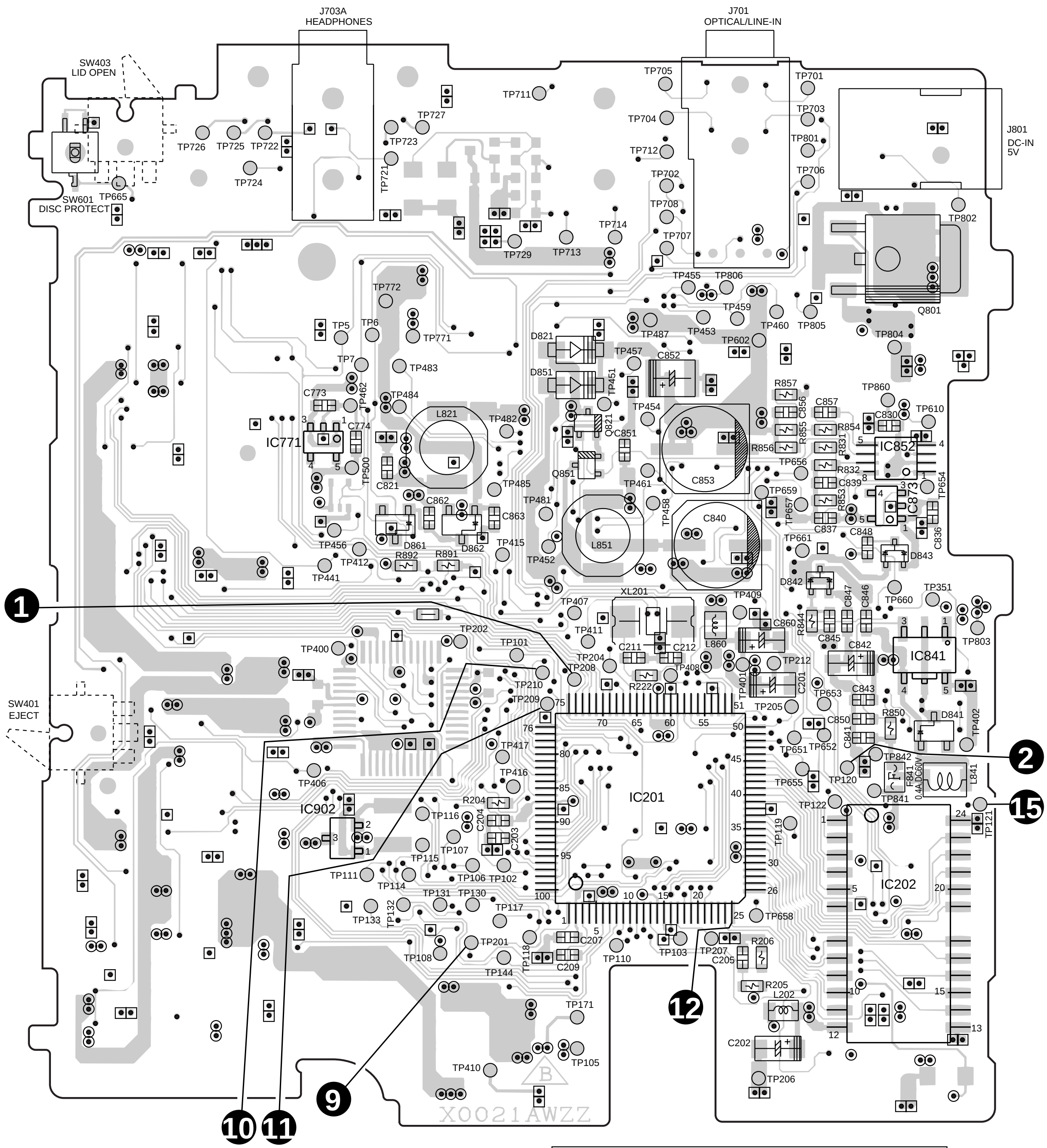
7	8	9	10	11	12

Figure 31 SCHEMATIC DIAGRAM (4/4)

MAIN PWB VERSION B X0021AWZZ

SUB PWB-B is added to this version PWB.

SUB PWB-B is shown in page 36,37.



MAIN PWB-A (BOTTOM VIEW)

● : Through-hole where the top, bottom and +B patterns are connected.

■ : Through-hole where the top, bottom and ground patterns are connected.

• : Through-hole where the top and bottom patterns are connected.

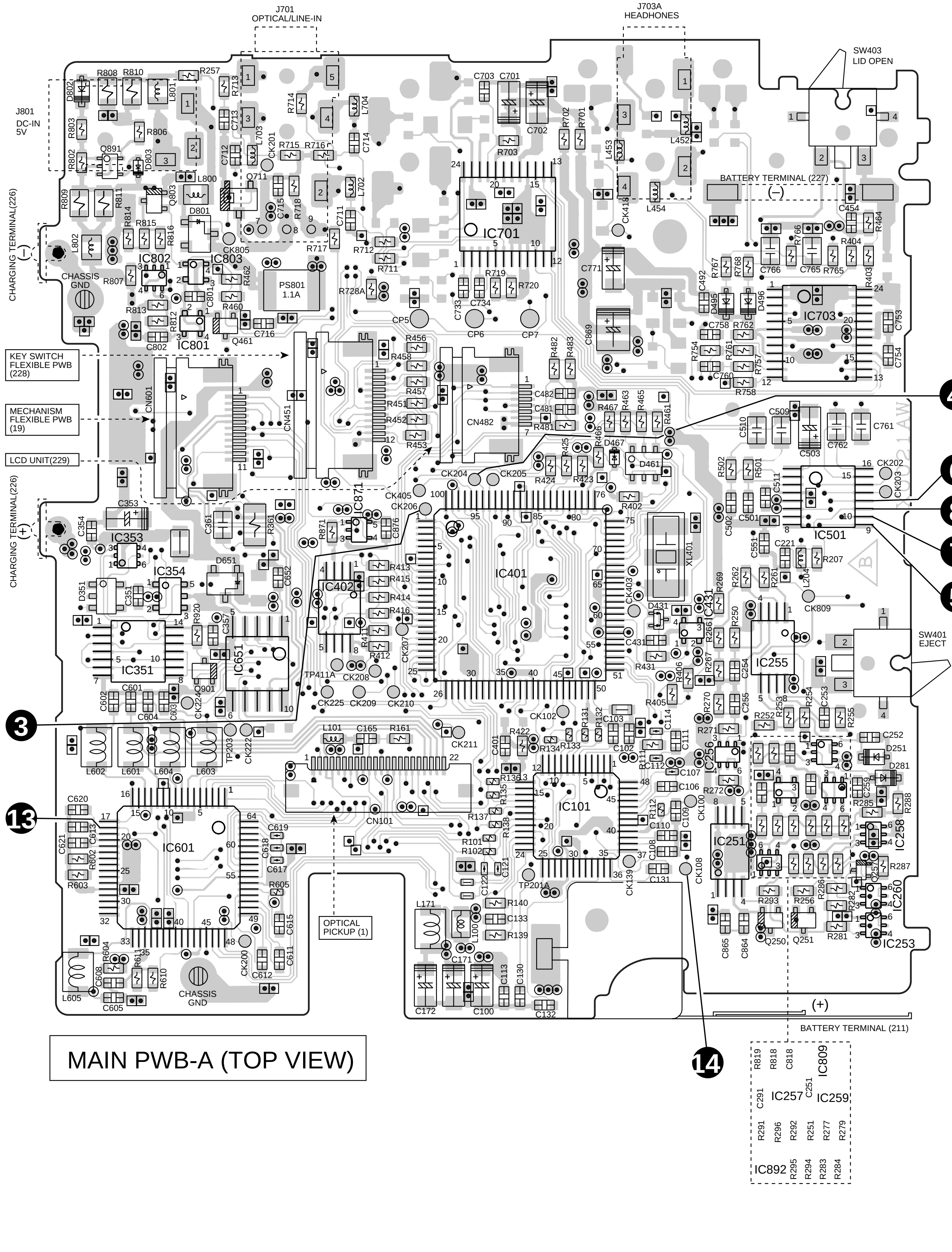
• The numbers 1 to 15 are waveform numbers shown in page 44.

Figure 32 WIRING SIDE OF P.W.BOARD (1/11)

MAIN PWB VERSION B X0021AWZZ

SUB PWB-B is added to this version PWB.

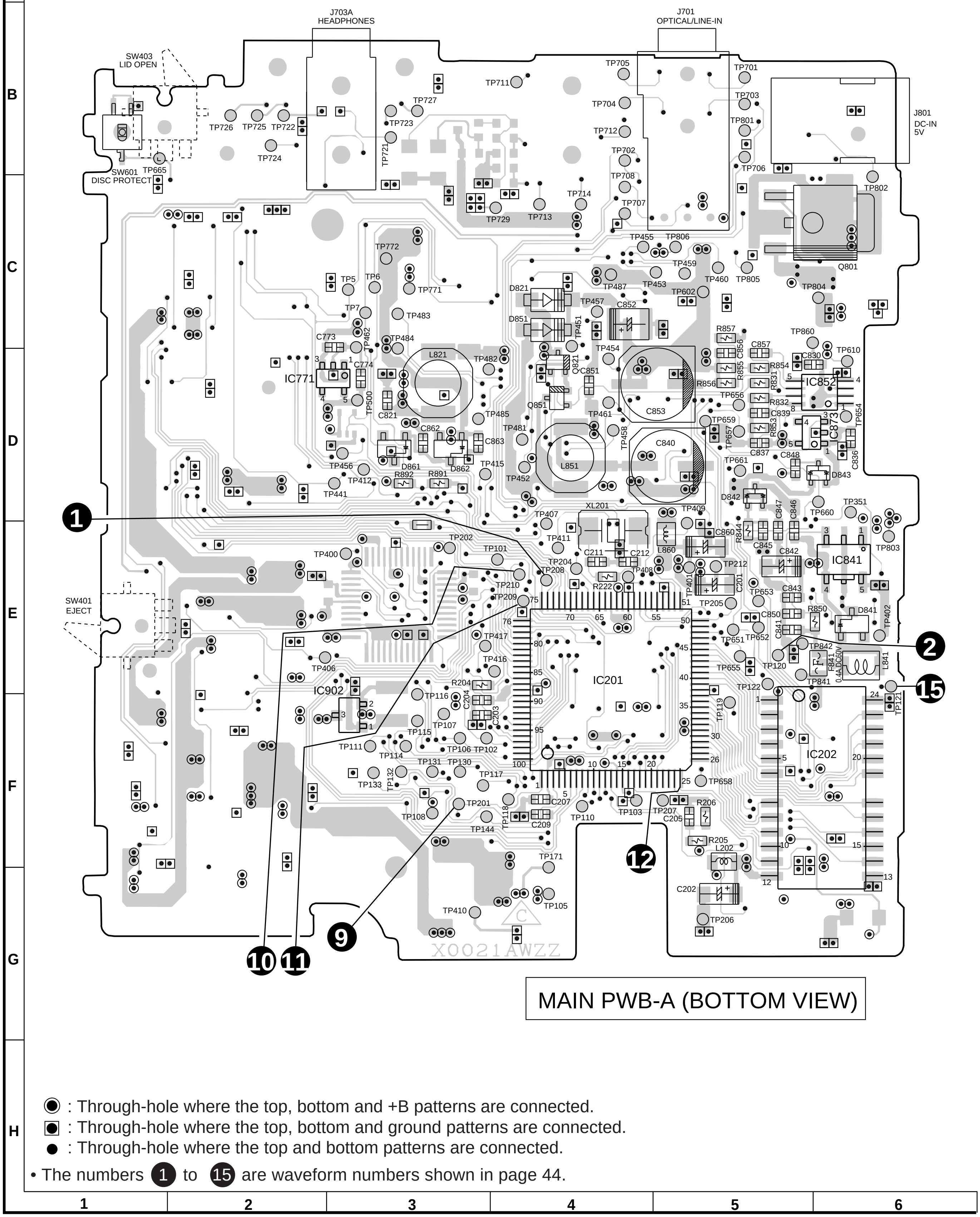
SUB PWB-B is shown in page 36,37.



7	8	9	10	11	12

Figure 33 WIRING SIDE OF P.W.BOARD (2/11)

MAIN PWB VERSION C X0021AWZZ
SUB PWB-B is added to this version PWB.
SUB PWB-B is shown in page 36,37.



MAIN PWB-A (BOTTOM VIEW)

- ◉ : Through-hole where the top, bottom and +B patterns are connected.
- ▣ : Through-hole where the top, bottom and ground patterns are connected.
- ● : Through-hole where the top and bottom patterns are connected.

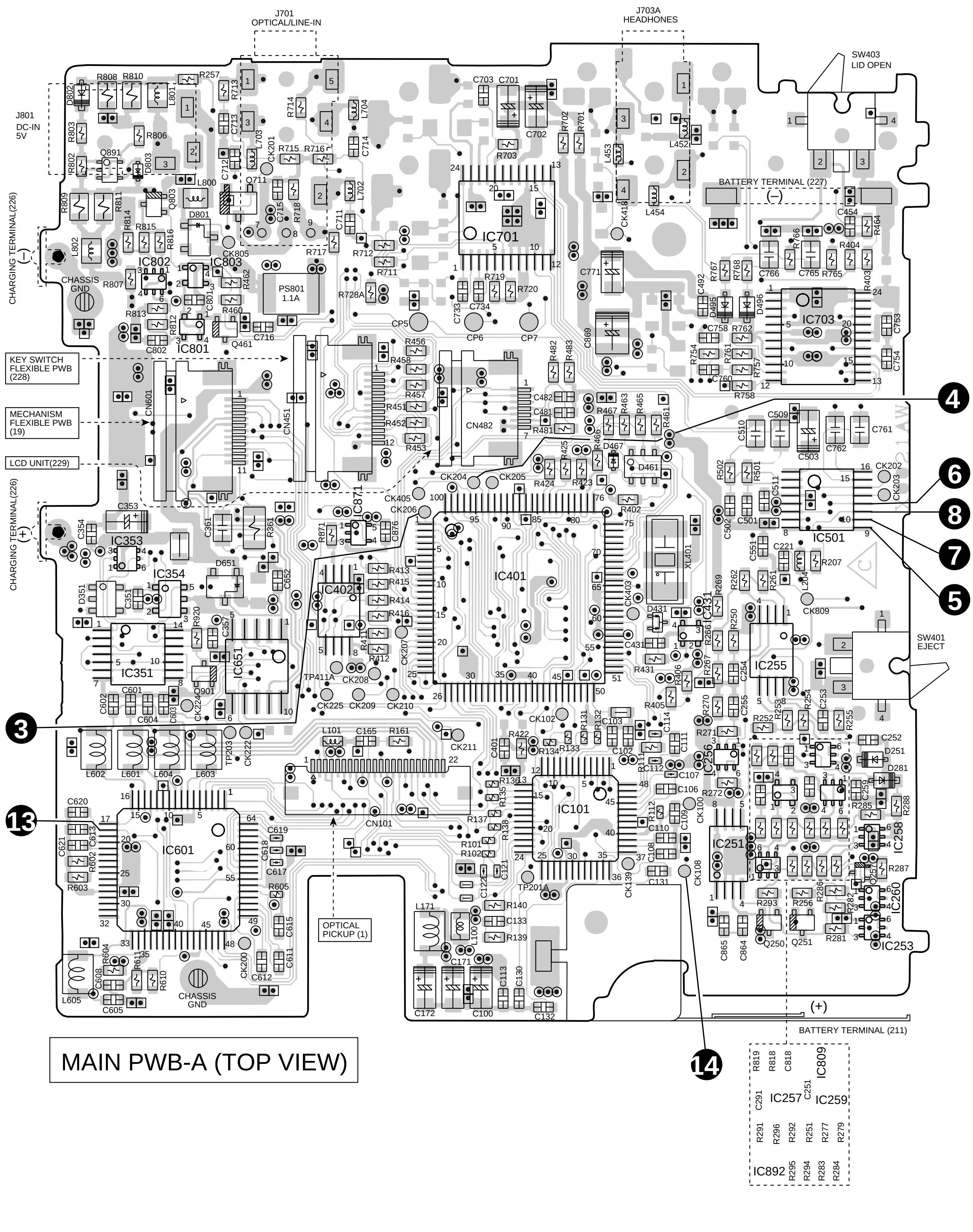
• The numbers 1 to 15 are waveform numbers shown in page 44.

Figure 34 WIRING SIDE OF P.W.BOARD (3/11)

MAIN PWB VERSION △C X0021AWZZ

SUB PWB-B is added to this version PWB.

SUB PWB-B is shown in page 36,37.



7	8	9	10	11	12

Figure 35 WIRING SIDE OF P.W.BOARD (4/11)

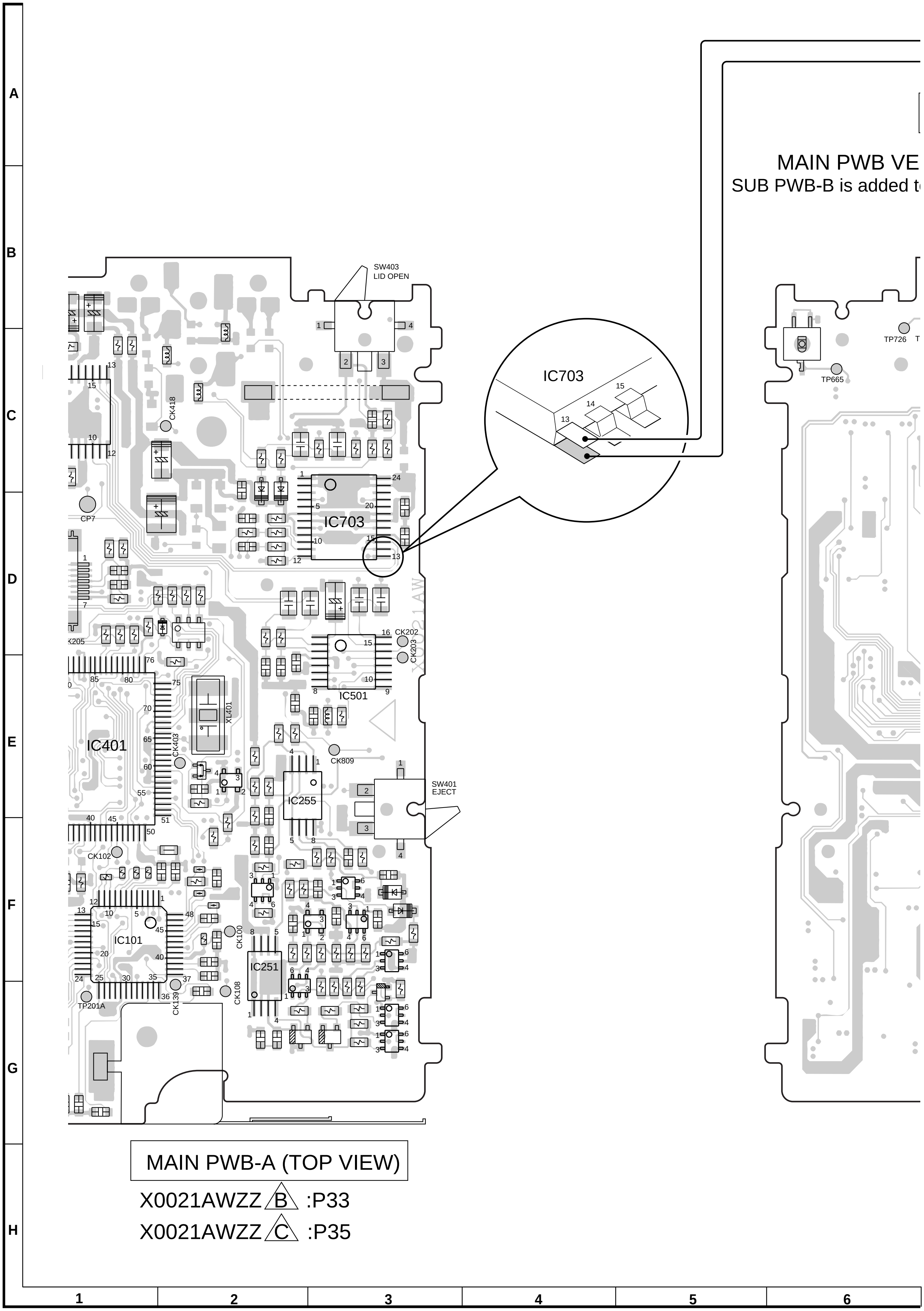
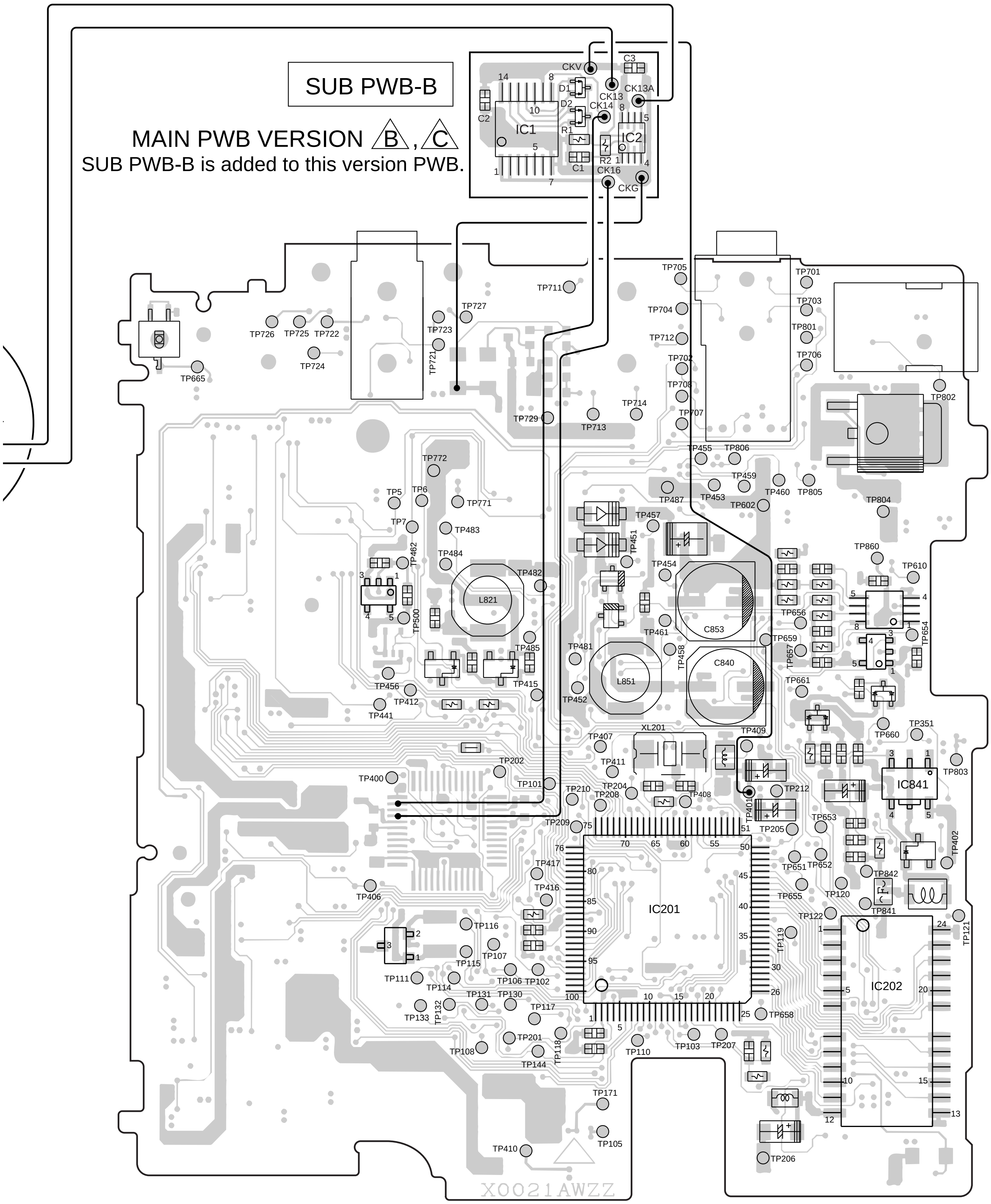


Figure 36 WIRING SIDE OF P.W.BOARD (5/11)



MAIN PWB-A (BOTTOM VIEW)

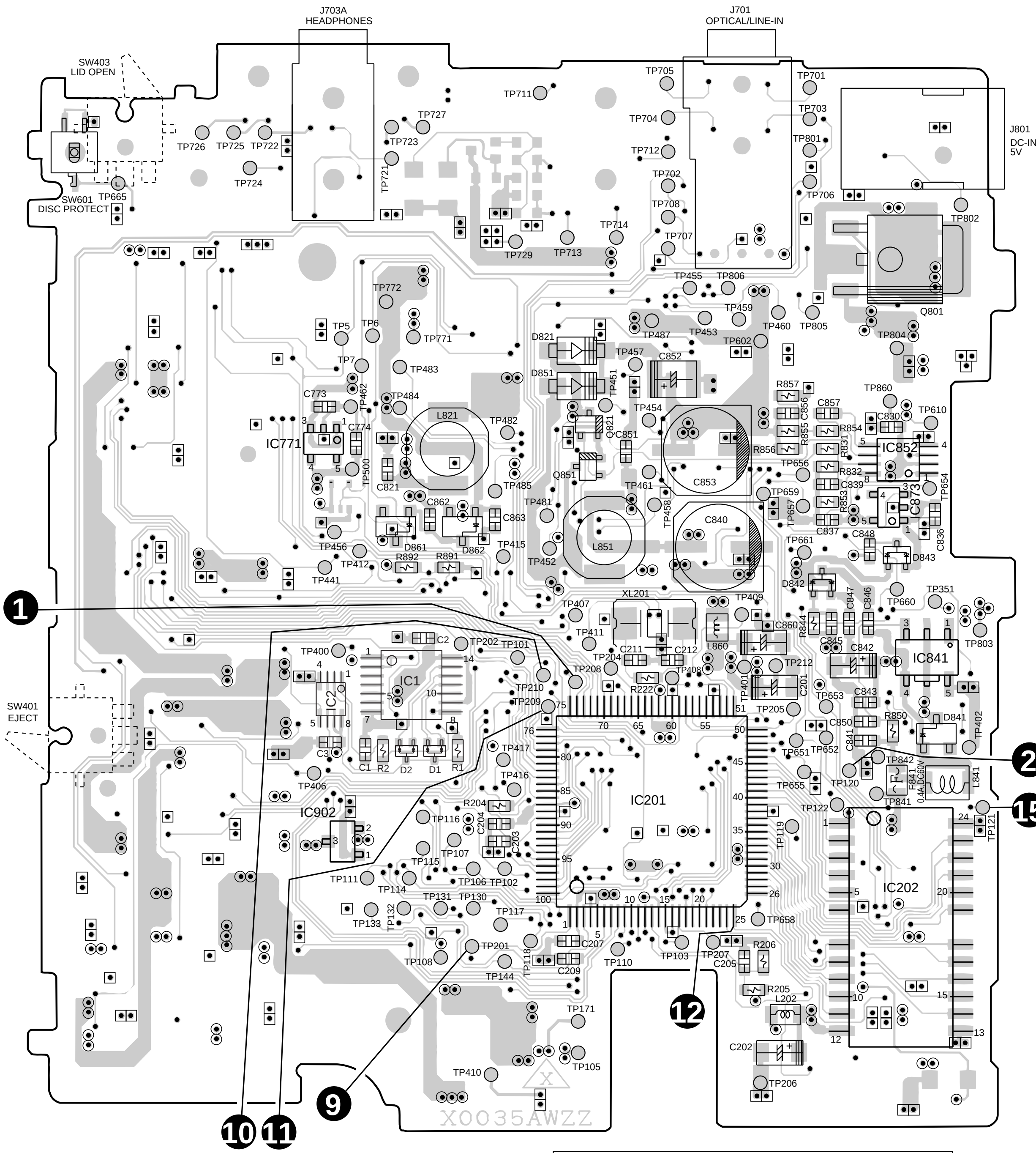
X0021AWZZ B :P32

X0021AWZZ C :P34

7	8	9	10	11	12

Figure 37 WIRING SIDE OF P.W.BOARD (6/11)

MAIN PWB VERSION X0035AWZZ



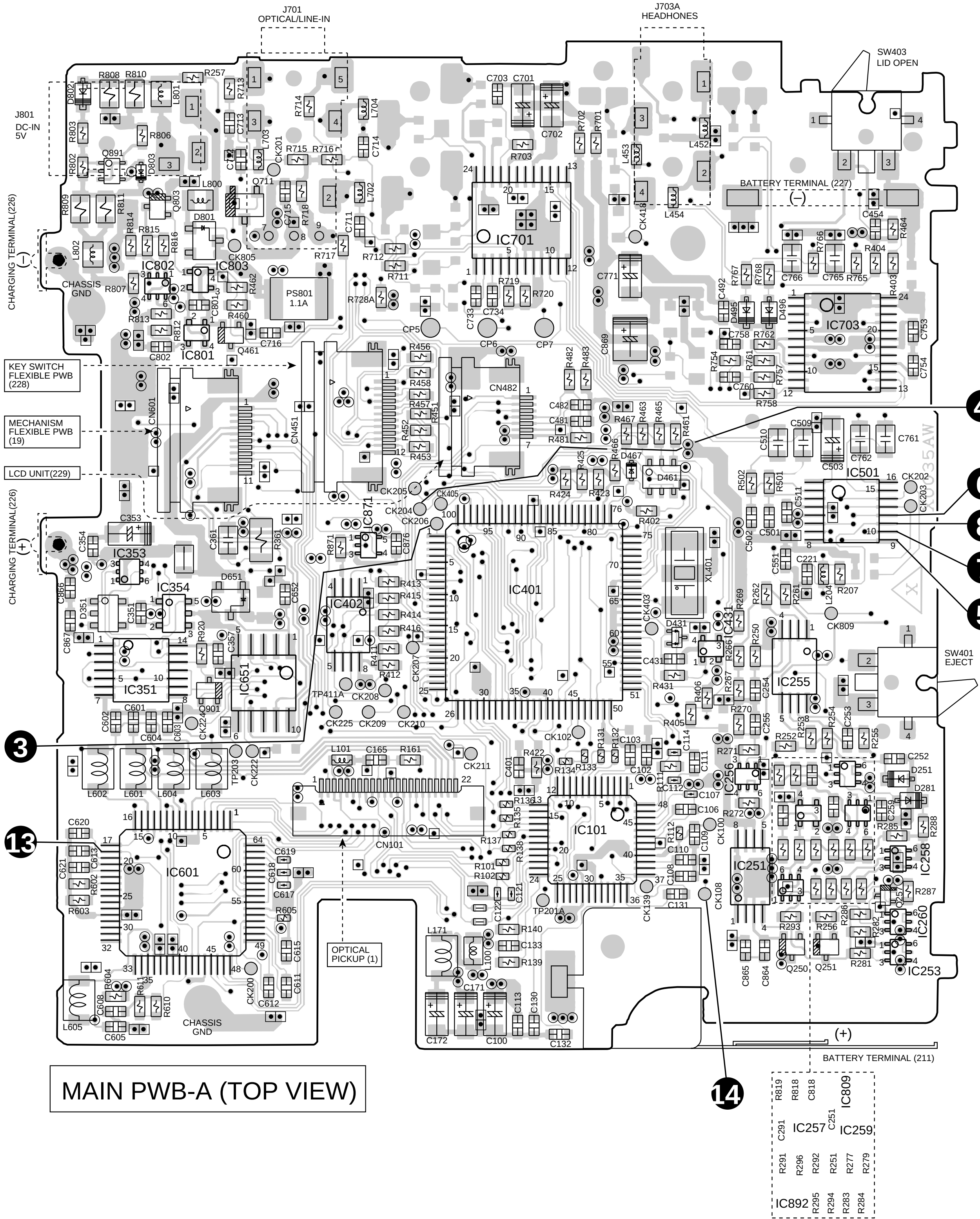
MAIN PWB-A (BOTTOM VIEW)

- ◉ : Through-hole where the top, bottom and +B patterns are connected.
- ▣ : Through-hole where the top, bottom and ground patterns are connected.
- ● : Through-hole where the top and bottom patterns are connected.

• The numbers 1 to 15 are waveform numbers shown in page 44.

Figure 38 WIRING SIDE OF P.W.BOARD (7/11)

MAIN PWB VERSION X X0035AWZZ

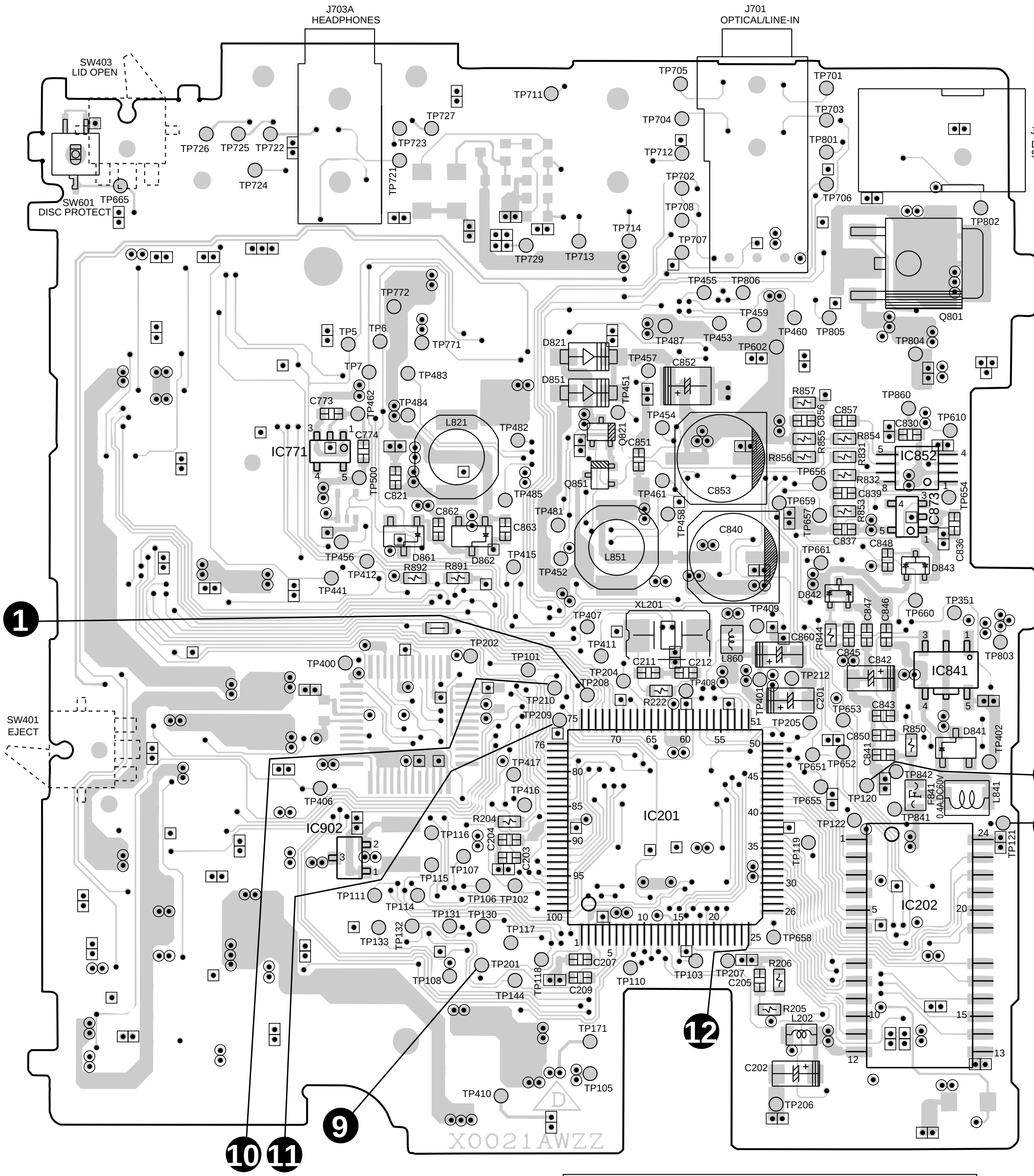


MAIN PWB-A (TOP VIEW)

7	8	9	10	11	12

Figure 39 WIRING SIDE OF P.W.BOARD (8/11)

MAIN PWB VERSION D X0021AWZZ



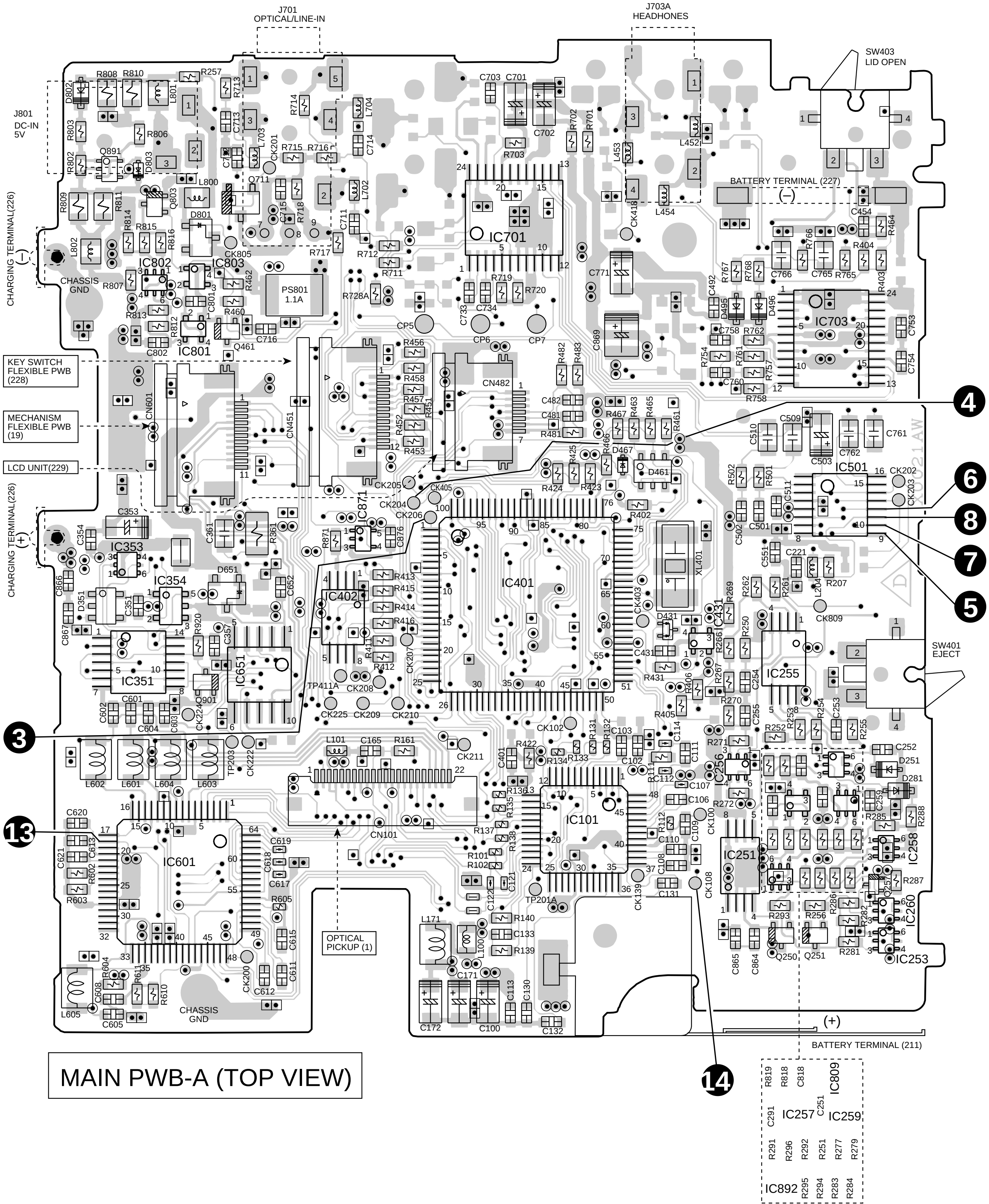
MAIN PWB-A (BOTTOM VIEW)

● : Through-hole where the top, bottom and +B patterns are connected.
■ : Through-hole where the top, bottom and ground patterns are connected.
● : Through-hole where the top and bottom patterns are connected.

• The numbers 1 to 15 are waveform numbers shown in page 44.

Figure 40 WIRING SIDE OF P.W.BOARD (9/11)

MAIN PWB VERSION D X0021AWZZ



7	8	9	10	11	12

Figure 41 WIRING SIDE OF P.W.BOARD (10/11)

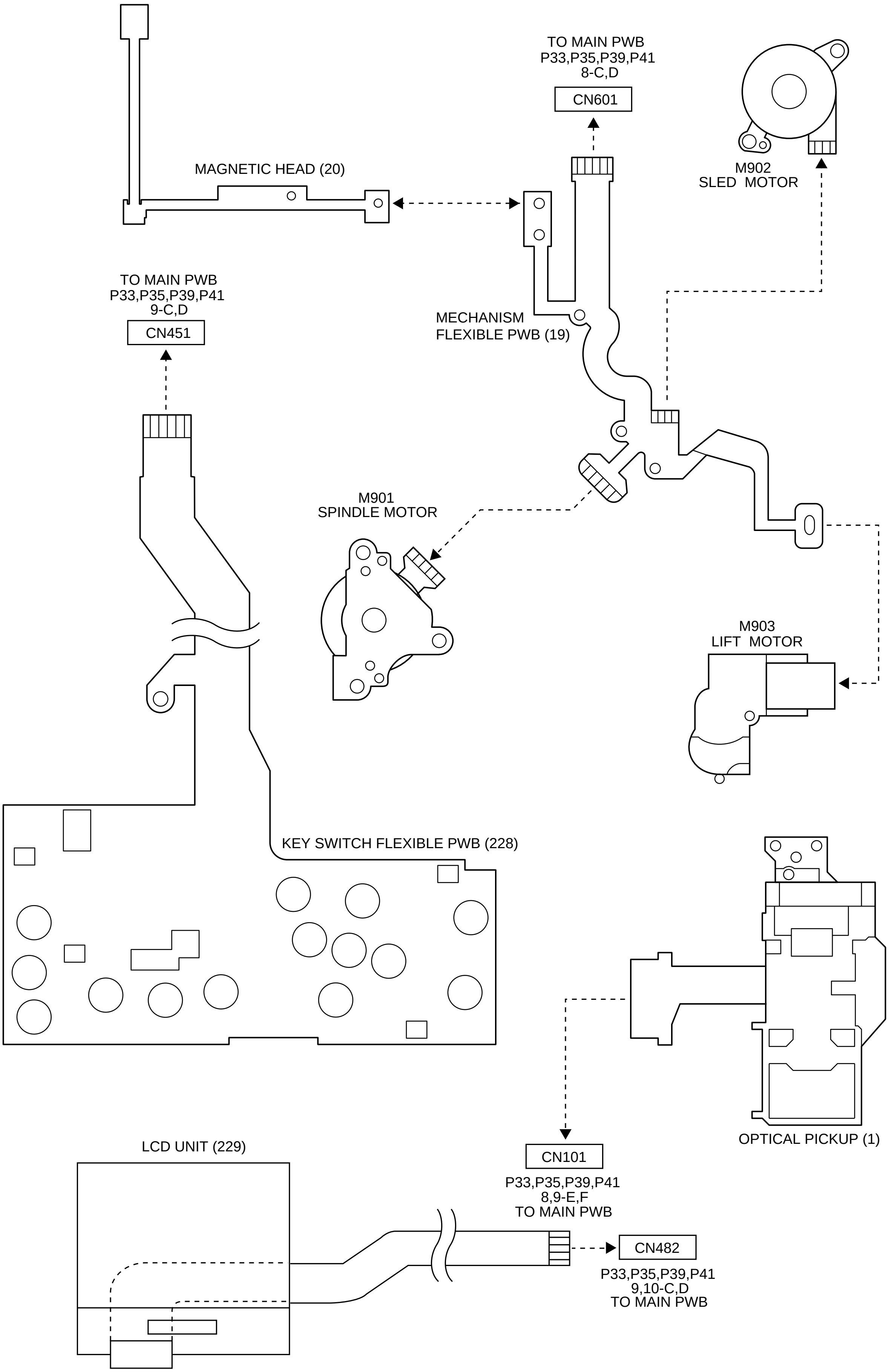


Figure 42 WIRING SIDE OF P.W.BOARD (11/11)

VOLTAGE

IC101

PIN NO.	VOLTAGE
1	0.27V
2	0.27V
3	0.27V
4	0.27V
5	1.31V
6	1.31V
7	1.31V
8	1.31V
9	1.31V
10	1.31V
11	1.31V
12	1.31V
13	1.31V
14	1.31V
15	1.31V
16	1.31V
17	1.31V
18	1.31V
19	1.31V
20	1.31V
21	1.31V
22	1.31V
23	1.31V
24	0.28V
25	1.49V
26	0V
27	0V
28	2.61V
29	2.61V
30	2.36V
31	0V
32	1.31V
33	1.31V
34	0.26V
35	1.08V
36	0V
37	1.31V
38	1.31V
39	0.27V
40	2.61V
41	1.53V
42	0V
43	1.31V
44	0.19V
45	0.29V
46	1.31V
47	0.29V
48	0.51V

IC202

PIN NO.	VOLTAGE
1	2.6V
2	1.8V
3	0V
4	0V
5	0V
6	0.3V
7	1.1V
8	1.45V
9	0.58V
10	0V
11	0.59V
12	2.61V
13	0V
14	0.55V
15	0.85V
16	0.85V
17	0.85V
18	0.85V
19	1.1V
20	1.88V
21	2.05V
22	1.82V
23	1.82V
24	0V

IC201

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0.79V	51	1.3V
2	2.61V	52	0V
3	1.31V	53	0V
4	0V	54	0V
5	2.61V	55	2.6V
6	1.31V	56	0V
7	1.31V	57	0V
8	1.31V	58	0V
9	1.31V	59	0V
10	1.31V	60	0V
11	1.31V	61	0.9V
12	1.31V	62	1.6V
13	1.31V	63	0V
14	1.63V	64	0.71V
15	0V	65	0.71V
16	0V	66	2.6V
17	1.31V	67	1.3V
18	0V	68	0.46V
19	0V	69	0V
20	0V	70	1.3V
21	0V	71	1.3V
22	0V	72	0V
23	0V	73	0V
24	0V	74	0V
25	0.23V	75	1.3V
26	0.6V	76	1.3V
27	0.6V	77	0V
28	0.6V	78	0V
29	1.45V	79	0V
30	1.03V	80	0V
31	2.61V	81	0V
32	0.6V	82	2.6V
33	0.9V	83	0V
34	0.9V	84	0V
35	0.9V	85	1.3V
36	0.9V	86	2.6V
37	1.88V	87	2.6V
38	0V	88	0V
39	2.1V	89	0.86V
40	1.8V	90	0.86V
41	1.8V	91	0.86V
42	1.1V	92	0.86V
43	1.8V	93	0.86V
44	2.5V	94	0.86V
45	1.1V	95	0.86V
46	1.8V	96	0.86V
47	1.1V	97	0.86V
48	2.5V	98	2.52V
49	1.98V	99	2.52V
50	1.1V	100	0V

IC251

PIN NO.	VOLTAGE
1	2.1V
2	0V
3	0V
4	0V
5	4.36V
6	2.1V
7	2.1V
8	2.1V

IC253

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	4.55V
5	4.51V
6	0V

IC255

PIN NO.	VOLTAGE
1	–1.03V
2	0V
3	0V
4	–2.3V
5	0V
6	0V
7	–1.69V
8	2.6V

IC256

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	1.95V
6	1.95V

IC257

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V

IC258

PIN NO.	VOLTAGE
1	0V
2	0.59V
3	4.16V
4	0V
5	0V
6	0V

IC259

PIN NO.	VOLTAGE
1	0V
2	0.54V
3	0.54V
4	0V
5	0.54V
6	2.51V

IC260

PIN NO.	VOLTAGE
1	0V
2	0V
3	–2.36V
4	0V
5	0V
6	–0.2V

IC401

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	2.52V
2	0V	52	2.52V
3	2.52V	53	2.52V
4	2.5V	54	2.52V
5	0V	55	0V
6	0V	56	0V
7	0V	57	2.52V
8	0V	58	2.52V
9	0V	59	0V
10	0V	60	2.52V
11	2.38V	61	2.44V
12	2.52V	62	2.52V
13	2.45V	63	2.52V
14	2.45V	64	2.52V
15	2.52V	65	2.52V
16	0V	66	1.14V
17	2.52V	67	1.18V
18	0V	68	2.49V
19	0V	69	0V
20	0V	70	2.49V
21	2.52V	71	2.44V
22	2.52V	72	0V
23	0.9V	73	2.61V
24	0.88V	74	2.47V
25	0.88V	75	2.5V
26	1.03V	76	0.15V
27	0.8V	77	2.52V
28	0.8V	78	2.52V
29	0.58V	79	0V
30	0.58V	80	2.13V
31	0V	81	1.49V
32	0V	82	2.52V
33	2.61V	83	2.52V
34	2.58V	84	2.52V
35	2.58V	85	0V
36	2.52V	86	0V
37	0V	87	0V
38	2.52V	88	0V
39	0V	89	0V
40	2.52V	90	0V
41	0V	91	0V
42	2.52V	92	2.52V
43	2.52V	93	0V
44	0V	94	2.61V
45	0V	95	2.52V
46	0V	96	0V
47	0V	97	2.5V
48	0V	98	2.52V
49	0V	99	2.52V
50	2.52V	100	2.52V

IC351

PIN NO.	VOLTAGE
1	0V
2	0V
3	4.47V
4	0V
5	0V
6	4.47V
7	0V
8	1.18V
9	4.46V
10	0V
11	1.18V
12	4.46V
13	0V
14	4.5V

IC353

PIN NO.	VOLTAGE
1	0.23V
2	0.23V
3	0V
4	0.42V
5	0V
6	2.61V

IC354

PIN NO.	VOLTAGE
1	1.07V
2	0V
3	0V
4	0V
5	0V

IC402

PIN NO.	VOLTAGE
1	0V
2	2.52V
3	0V
4	0V
5	0V
6	0V
7	2.52V
8	0V

IC431

PIN NO.	VOLTAGE
1	0V
2	2.52V
3	0V
4	0V

IC501

PIN NO.	VOLTAGE
1	0V
2	1.1V
3	1.1V
4	0V
5	2.31V
6	0V
7	0V
8	0V
9	0V
10	1.3V
11	1.26V
12	1.29V
13	0V
14	0V
15	0.54V
16	0.62V

IC601

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	2.1V
9	0V
10	0V
11	0V
12	0V
13	2.1V
14	0V
15	0V
16	2.52V
17	0V
18	2.61V
19	0.78V
20	2.61V
21	0V
22	0V
23	0V
24	-
25	-
26	0.32V
27	0.25V
28	2.61V
29	0.23V
30	0V
31	0V
32	2.61V
33	0.21V
34	1.3V
35	2.1V
36	0V
37	0V
38	1.85V
39	0V
40	1.85V
41	2.1V
42	1.68V
43	0V
44	2.61V
45	0V
46	2.52V
47	2.52V
48	2.52V
49	1.3V
50	2.2V
51	3.91V
52	6.5V
53	7.81V
54	0V
55	0V
56	0V
57	0V
58	0V
59	0V
60	0V
61	0V
62	0V
63	0V
64	0V

IC651

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	1.07V
8	0V
9	1.07V
10	0V

IC701

PIN NO.	VOLTAGE
1	0.9V
2	0V
3	0.72V
4	0V
5	0V
6	0V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V
17	–2.39V
18	0V
19	0V
20	2.56V
21	0.88V
22	0V
23	0V
24	0V

IC703

PIN NO.	VOLTAGE
1	0V
2	0V
3	0.29V
4	0V
5	0V
6	2.61V
7	–2.41V
8	0V
9	0V
10	0V
11	0V
12	1.32V
13	2.52V
14	2.61V
15	0V
16	2.61V
17	0V
18	–2.41V
19	–2.41V
20	0V
21	0V
22	1.29V
23	0V
24	0V

IC771

PIN NO.	VOLTAGE
1	2.579V
2	0V
3	2.579V
4	0V
5	2.321V

IC801

PIN NO.	VOLTAGE
1	0V
2	4.6V
3	2.02V
4	0V

IC802

PIN NO.	VOLTAGE
1	0.49V
2	1.06V
3	0V
4	0.49V
5	1V
6	4.76V

IC803

PIN NO.	VOLTAGE
1	4.55V
2	4.60V
3	0V
4	0V

IC809

PIN NO.	VOLTAGE
1	0V
2	2.52V
3	4.53V
4	4.56V
5	0V
6	0V

IC841

PIN NO.	VOLTAGE
1	-
2	2.516V
3	2.098V
4	2.038V
5	0V

IC852

PIN NO.	VOLTAGE
1	0V
2	2.5V
3	0V
4	0V
5	0.93V
6	0.93V
7	0V
8	0V

IC871

PIN NO.	VOLTAGE
1	1.286V
2	2.513V
3	0V
4	0V
5	2.515V

IC873

PIN NO.	VOLTAGE
1	6.94V
2	0V
3	2.51V
4	-
5	4.53V

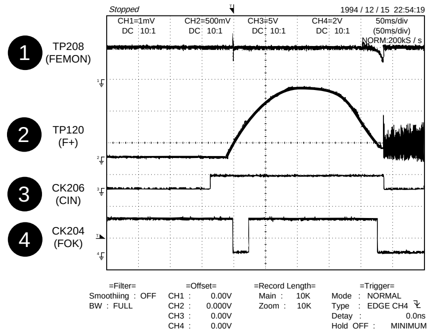
IC892

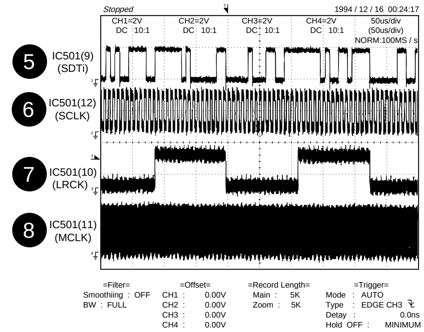
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	1.69V
5	0.6V
6	0V

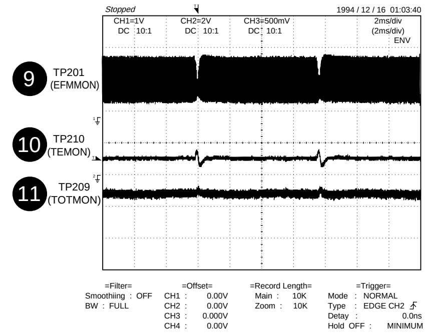
IC902

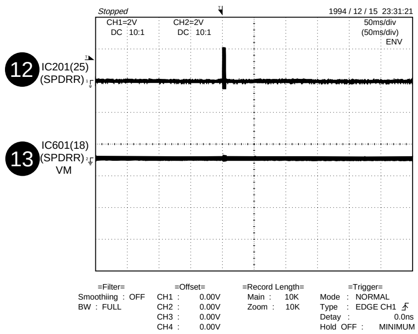
PIN NO.	VOLTAGE
1	0V
2	0V
3	2.61V

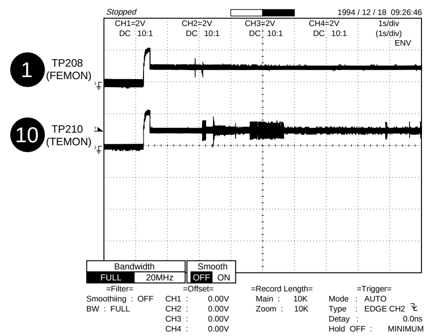
WAVEFORMS OF MD CIRCUIT

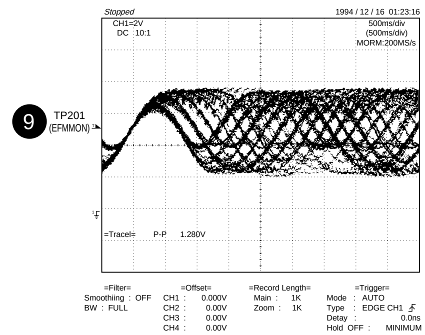


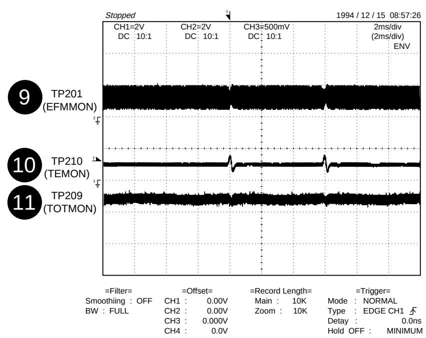


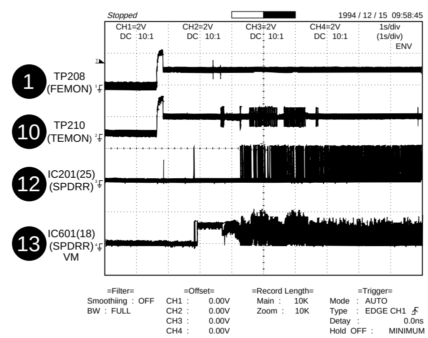


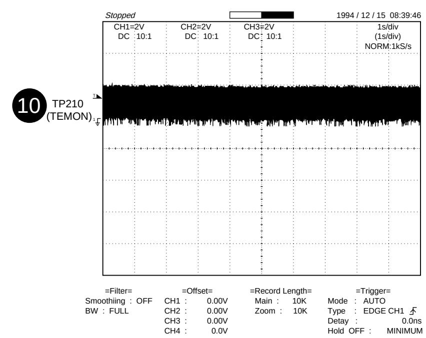


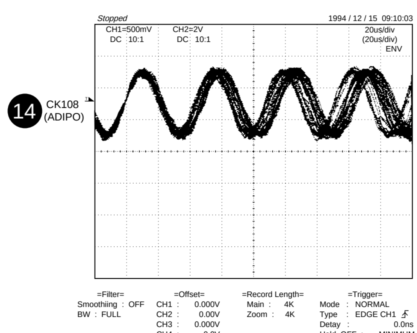


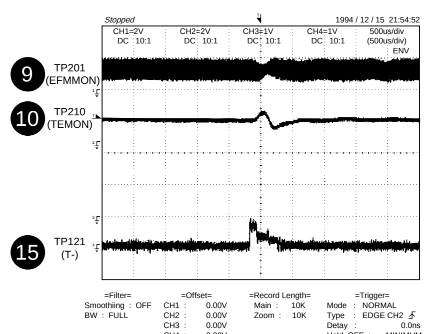




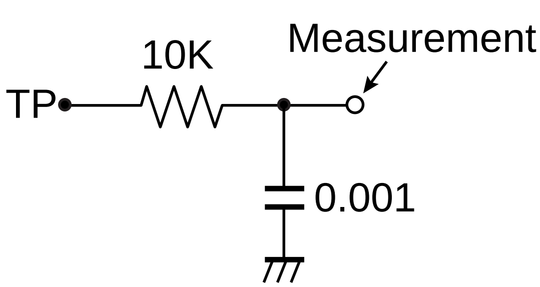








For TP208, TP209, and TP210, use the specific LPF, and observe the waveform.



When watching the EEM monitor (TP201)
Set MSL from 00H to 80H with EEPROM control setting. After completion restore 00H.

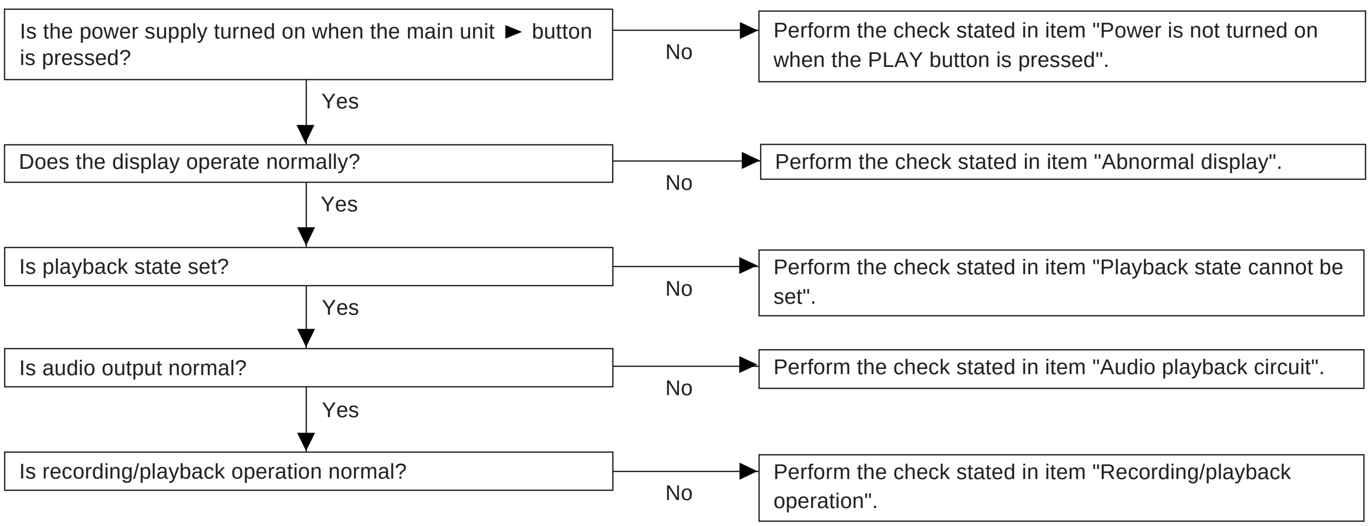
TROUBLESHOOTING

It is advisable to use the TEST mode (refer to Error Data Display Mode, P14) indicating the causes of troubles before starting repair. Causes of operation errors (up to 10 errors) are recorded as error codes. This information is useful for repair.

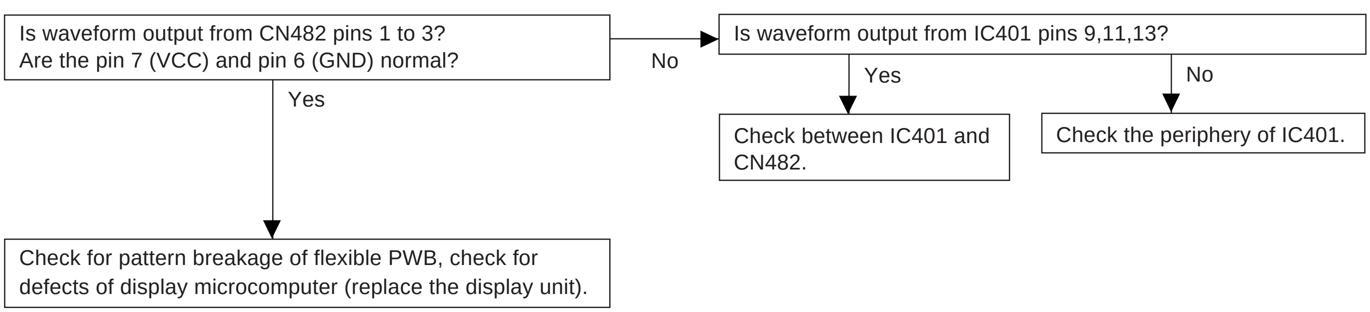
When MD playback does not function

When the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.
Remove the cabinet and follow the troubleshooting instructions.
"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.
Gently clean the lens with a lens cleaning tissue and a small amount of lens cleaner on the market.
Do not touch the lens with the bare hand.



• Abnormal display



• Audio playback circuit

Although the playback time display is acting., no sound is given during playback in the normal mode.

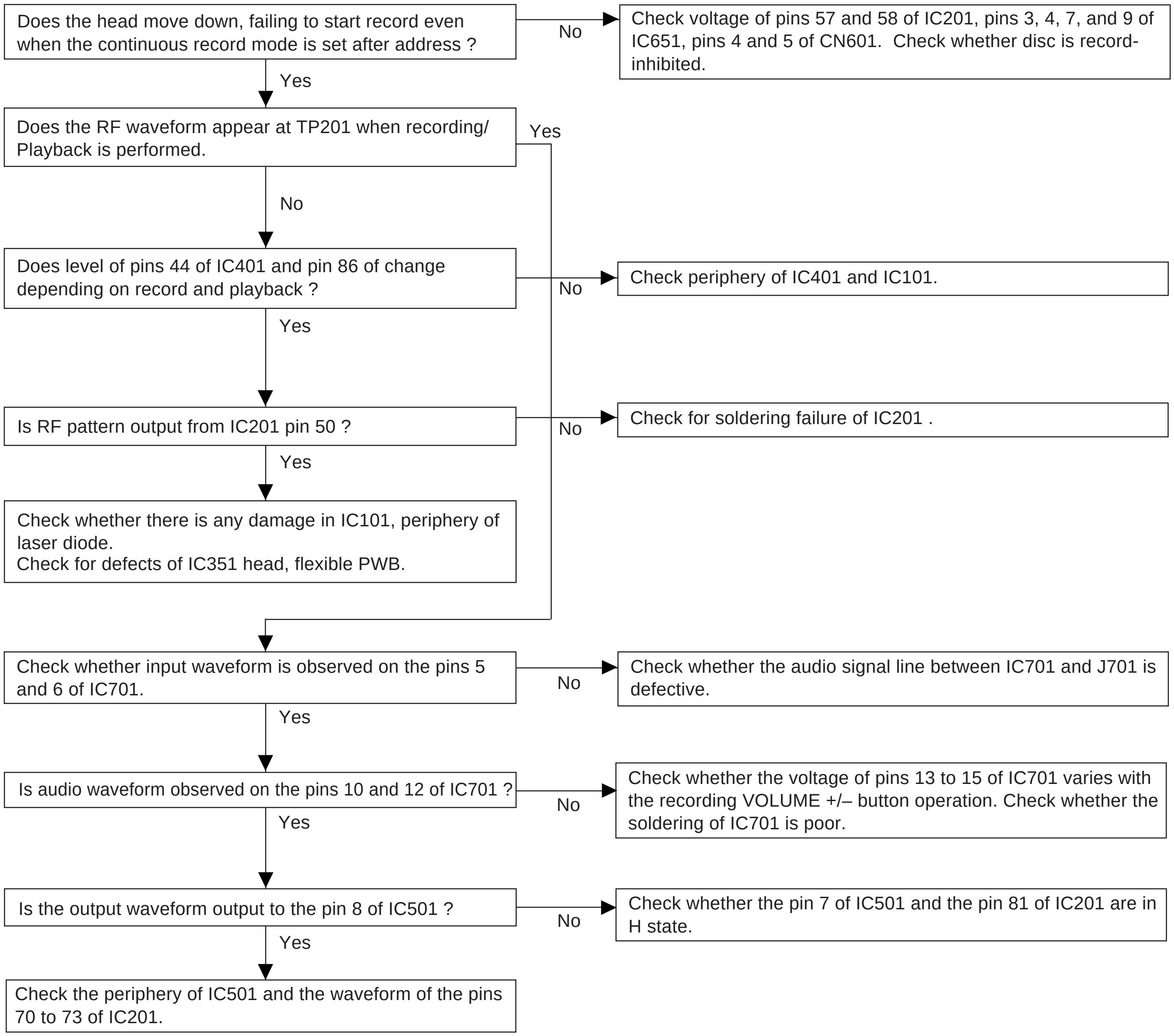
- Is audio waveform output from IC501 pins 15 and 16?
  - No → Check IC201 pins 70 to 72, pin 74 and IC501 pins 9, 10, 11, 12.
  - Yes ↓
- Is audio waveform output from IC703 pins 8 and 17.
  - No → Check the pins 4 and 21 of IC703.
  - Yes ↓
- Is audio waveform output from J703A pins 2 and 3.
  - No → Check whether there is defective solder joint of audio signal line between IC703 and J703A
  - Yes ↓
- Check headphones jack, and periphery of headphone.

• The spindle motor fails to run. Does the head move

- Does the waveform appear on the IC201 pins 24 and 25 after TEST mode AUTO2 completion and in this state?
  - No → Check the IC201 periphery.
  - Yes ↓
- Does waveform appear on the IC601 pin 36?
  - No → Replace. IC601
  - Yes ↓
- Does waveform appear on IC601 pins 56, 57 and 58?
  - No → L605, IC201, IC601, CN601 and flex, etc. soldering check
  - Yes ↓
- Replace the spindle motor.

• Recording/playback operation.

Insert a low reflection disc, and ascertain audio output by normal playback, and then set TEST REC mode.
Change MSL from 00H to 80H by the control setting of EEPROM. After completing the operation, return in to 00H.



FUNCTION TABLE OF IC

IC401 RH-iX0484AWZZ :System Microcomputer (IX0484AW) (1/2) Main PWB Version B,C,X
IC401 RH-iX0529AWZZ :System Microcomputer (IX0529AW) (1/2) Main PWB Version D

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	P12	CIN	Output	Track cross signal/focus drive detection
2	P13	SPIN	Input/Output	Spindle motor FG pulse detection input
3*	P14	RFPCNT	Output	RF control
4	P15	DISCPR	Output	Disc record inhibition switch input
5*	TIOCA2	SPWDS	Output	Reserve
6*	P17	LCDRST	Output	Reserve
7	VSS	VSS	—	Ground potential
8*	TxD0	RMDAT	Output	Remote control indication data output
9	TxD1	DSPDAT	Output	Unit indication data output
10*	P32	P32	Output	Reserve
11	P33	DSPSTB	Output	Main unit display strobe output
12*	SCK0	SCK0	Output	Serial I/O clock output (not used)
13	SCK1	DSPSCK	Output	Unit indication data clock output
14	PE0	_EPCS	Output	EEPROM chip selection output
15	PE1	EEPD	Input/Output	EEPROM serial data input/output
16	PE2	EEPK	Output	EEPROM serial clock output
17	PE3	EPRT	Output	EEPROM write protection
18	VSS	VSS	—	Ground potential
19*	PE4	PE4	Output	Reserve
20	PE5	SYRS	Output	System LSI register selection output
21	PE6	_SYRD	Output	System LSI read enable output
22	PE7	_SYWR	Output	System LSI write enable output
23-30	PD0-PD7	SYD0-SYD7	Input/Output	System LSI parallel data bus
31	VSS	VSS	—	Ground potential
32	PC0	RCLAT	Output	Record audio IC data latch output
33	PC1	_MCPGI	Input	Microphone plug insertion detection input
34	PC2	_INPGI	Input	Line/digital plug insertion detection
35	PC3	INPGCK	Input	Line/digital plug type detection
36	PC4	RCPCNT	Input/Output	Record circuit power control output
37*	PC5	TEST1	Input	Test mode setting input 1
38*	PC6	TEST0	Input	Test mode setting input 0
39	PC7	JPNP	Input	Kana conversion/Kana input existence/nonexistence discrimination
40	VCC	VCC	—	Positive power supply
41	PB0	OPICGA	Output	P.U detection sensitivity switching output
42	PB1	PBOPON	Output	Audio IC output stage control output
43	PB2	PBLAT	Output	Audio IC data latch output
44	PB3	LDON	Output	P.U. laser ON/OFF control output
45	PB4	DISCP	Output	RF amp TE polarity switching output
46	PB5	SGAIN	Output	RF amp gain polarity switching output
47	PB6	RACLK	Output	Audio IC data clock output
48	PB7	RADAT	Output	Audio IC serial data output
49	VSS	VSS	—	Ground potential
50*	PA0	DLBHP	Input	Judgement input
51	PA1	SLCNT1	Output	Stepping control 1
52	PA2	SLCNT2	Output	Stepping control 2
53	PA3	SLCNT3	Output	Stepping control 3
54*	P20	DHLAT	Output	Latch output for dolby headphone
55	P21	EMPH0	Output	Audio emphasis control output 0
56	P22	BUZOUT	Output	Beep sound pulse output
57	MD0	MD0	Input	Operation mode selection input 0

In this unit, the terminal with asterisk mark (*) is open terminal which is not connected to the outside.

IC401 RH-iX0484AWZZ :System Microcomputer (IX0484AW) (2/2) Main PWB Version B,C,X
IC401 RH-iX0529AWZZ :System Microcomputer (IX0529AW) (2/2) Main PWB Version D

Pin No.	Port Name	Terminal Name	Input/Output	Function
58	MD1	MD1	Input	Operation mode selection input 1
59	P23	DCEXT	Input/Output	DC-IN detection (level)
60*	WDT0VF	WDT0VF	Output	Watch dog timer (not used)
61	MD2	MD2	Input	Operation mode selection input 2
62	RES	_RESET	Input	Microcomputer hard reset input
63	NMI	NMI	Input	Nonmaskable interruption input (not used)
64	STBY	_STBY	Input	Microcomputer standby input (not used)
65	VCC	VCC	—	Positive power supply
66	XTAL	XTAL	—	Crystal connection terminal
67	EXTAL	EXTAL	—	Crystal connection terminal
68	VSS	VSS	—	Ground potential
69	PF7	_PLAY	Input	Unit PLAY button operation detection input
70	PF6	_REC	Input	Unit REC button operation detection input
71	PF5	_STOP	Input	Unit STOP button operation detection input
72*	PF4	PF4	Output	Reserve
73	IRQ3	_DINT	Input	System LSI interruption
74	IRQ2	ARQD	Input	Disk cap opens and closes detection/it is started and required
75	IRQ1	_RPLAY	Input	Remote control PLAY key operation detection input
76	IRQ0	_ARQK	Input	Start request by the key /DC-IN input
77	AVCC	AVCC	—	A/D and D/A converter positive power supply
78	VREF	VREF	—	A/D and D/A converter reference voltage
79	AN0	PLVBAT	Input	Battery voltage detection input
80	AN1	CHIMON	Input	D/C - D/C converter unusual voltage detection
81	AN2	TEMP	Input	Ambient temperature detection input
82	AN3	RKEY	Input	Remote control key operation detection input
83	AN4	HKEY1	Input	Unit key operation detection input 1
84	AN5	HKEY2	Input	Unit key operation detection input 2
85	P46/AN6/DA0	CHGCNT	Output	Charging current control output
86	DA1	LDVAR	Output	P.U. laser power setting output
87	AVSS	AVSS	—	A/D and D/A converter ground potential
88	VSS	VSS	—	Ground potential
89	P24	CHGON	Output	Battery charge ON/OFF control output
90*	TIOCB4	MCMON	Output	Internal operation status monitor
91	P26	PLVON	Output	Battery power supply line ON/OFF
92	P27	DCNT1	Output	Mechanism driver enable output
93	PG0	SENSE	Input/Output	System LSI servo sense input
94	PG1	_FOK	Input/Output	Focus OK signal input
95	PG2	_XRST	Output	System LSI hard reset output
96*	PG3	CKSTP	Output	Microcomputer standby operation monitor output
97	PG4	_EJSW	Input/Output	Ejection lever operation detection input
98	VCC	VCC	—	Positive power supply
99	P10	PCNT2	Output	Servo DC-DC converter ON/OFF control
100	P11	PCNT1	Output	Main DC-DC converter ON/OFF control

In this unit, the terminal with asterisk mark (*) is open terminal which is not connected to the outside.

IC201 VHiLR378161-1 :Endec/Servo/Atrac (LR378161)
System LSI expansion output port (LR378161)

Pin No.	Port Name	Terminal Name	Input/Output	Function	Remarks
56	EXPORT0	LEDON1	Output	LED ON/OFF	'H':ON"L":OFF
57	EXPORT1	LDCNT1	Output	Recording head raising-lowering control output 1	See the separate table *3.
58	EXPORT2	LDCNT2	Output	Recording head raising-lowering control output 2	(Open)
59	EXPORT3	EMPH1	Output	Audio emphasis control output 1	See the separate table *2.
78	EXPORT4	HDON	Output	Not used.	'H': Record electric current
79	EXPORT5	OPTCNT	Output	Optical digital input circuit control	'H': Circuit operation ON
80	EXPORT6	DAPON	Output	D/A converter operation control output	'H': Operation ON
81	EXPORT7	ADPON	Output	A/D converter operation control output	'H': Operation ON

*1: List of TEST port settings

TEST1	TEST0	Details
H	H	Normal mode
H	L	No adjustment mode
L	H	Test mode
L	L	(Settings prohibited)

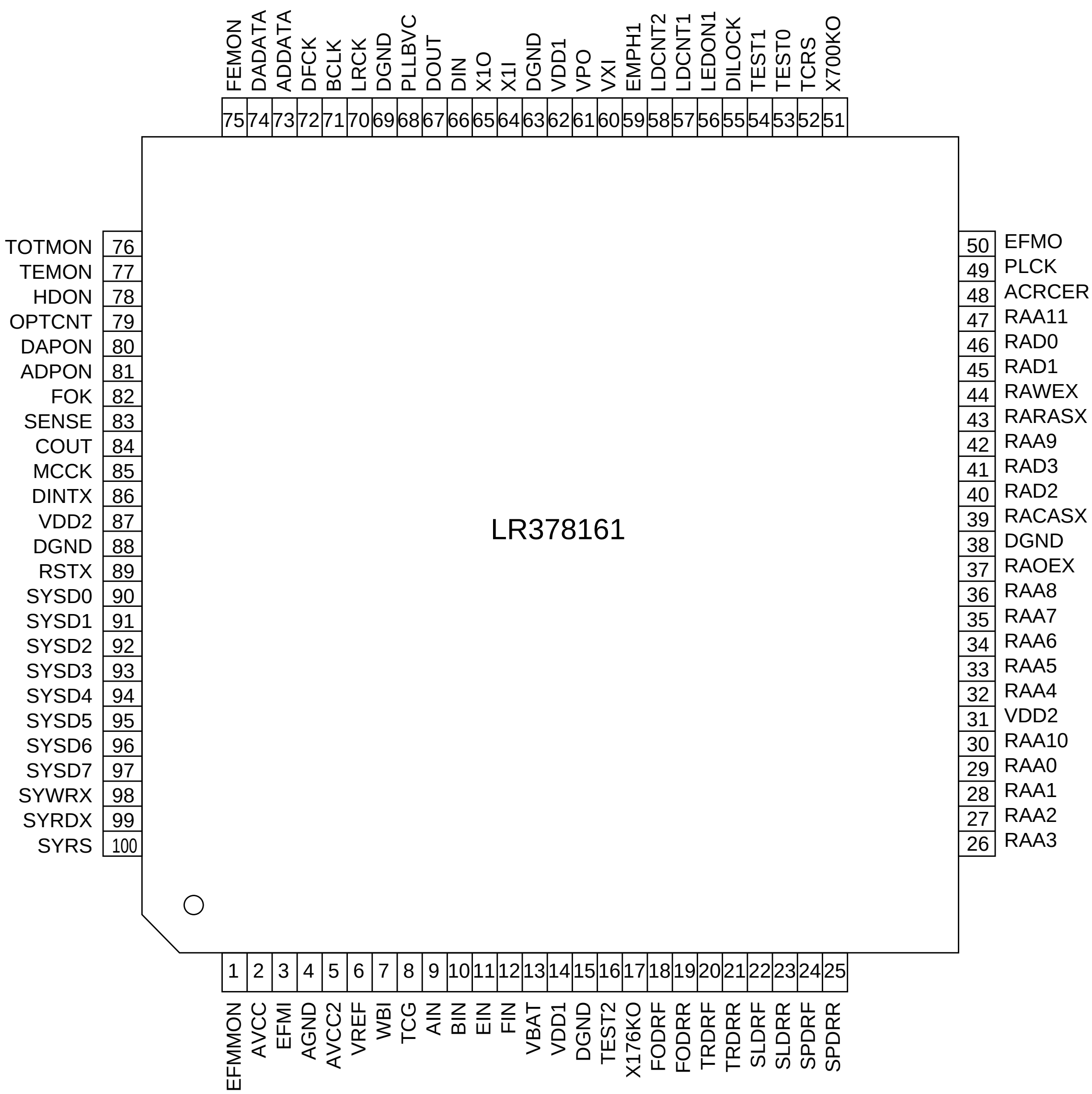
*2: List of EMPH port settings

EMPH1	EMPH0	Details
H	H	fs=32K: 'ON'
H	L	fs=48K: 'ON'
L	H	OFF
L	L	fs=44.1K: 'ON'

*3: List of LDCNT port settings

LDCNT1	LDCNT0	Details
H	H	Brake
H	L	Drive UP
L	H	Drive DOWN
L	L	Output OFF

IC201 VHiLR378161-1 :Endec/Servo/Atrac (LR378161)



IC601 VHiLV8201W+-1 :PWM Driver (LV8201W)(1/2)

Pin No.	Terminal Name	Function
1	COM	Spindle motor COM point connection terminal.
2	IN1F	H bridge 1 logic input terminal. Output from pins 9 and 7.
3	IN1R	
4	IN2F	H bridge 2 logic input terminal. Output from pins 12 and 14.
5	IN2R	
6	GND2	GND terminal in the MOS circuit section.
7	OUT1R	H bridge 1 reverse output terminal.
8	VS1	H bridge 1 motor power supply terminal. The capacitor is connected to the GND terminal.
9	OUT1F	H bridge 1 forward output terminal.
10	PGND1	H bridge 1 output section GND terminal.
11	PGND2	H bridge 2 output section GND terminal.
12	OUT2F	H bridge 2 forward output terminal.
13	VS2	H bridge 2 motor power supply terminal. The capacitor is connected to the GND terminal.
14	OUT2R	H bridge 2 reverse output terminal.
15*	NC	NC terminal.
16	MUTE	Mute terminal for H bridge 1-, 2-, 3-phase thread, and half bridge. Output terminals of drivers above have high impedance when L is input.
17	S/S	Start/stop terminal in the spindle motor section. Started with “H” level input.
18	BRK	Brake terminal in the spindle motor section. Counter torque brake applied with “L” level input.
19	VCO	VCO oscillation terminal. The capacitor is connected to the GND terminal. VCO oscillation frequency is changed in accordance with the revolution speed of the motor (voltage at VCOIN terminal).
20	VCC1	Terminal for supplying power to the bipolar circuit. The capacitor is connected to the GND terminal. Used by connecting to the VCC2 terminal (pin 44).
21	VCOIN	VCO control voltage input terminal. The capacitor is connected to the GND terminal. Control output is generated according to the revolution speed of the motor inside the logic, and charged/discharged to the capacitor connected to the GND terminal. The voltage at this terminal controls the VCO oscillation frequency.
22	RMAX	VCO maximum frequency setting terminal. The resistor is connected to the GND terminal. The frequency rises by lowering the resistance. With the VCOIN terminal set to VCC-1V, the VCO oscillation frequency is set to more than 48 times of the switching frequency at the highest revolution speed of the motor.
23	RMIN	VCO minimum frequency setting terminal. The frequency rises by lowering the connection resistance.
24*	VCTL	Speed control input terminal.
25*	VCREF	Terminal with referential voltage for speed control.
26*	NC	NC terminal
27	PWM	PWM signal input terminal in digital input mode (when SEL terminal is “H”). Output TR is turned on by inputting “H”.
28	GND1	GND of bipolar circuit section.
29*	NC	NC terminal
30*	SWCO	Position detection comparator output terminal in the thread driver section.
31*	SVCO	
32*	SUCO	
33*	SCOM	Input terminal for position detection comparator COM in the thread driver section.
34	SEL	Switching terminal for digital input “H”/analog input “L”. In digital input, torque directional signal is input into the BRK terminal (pin 18) and PWM signal into PWM terminal to drive the spindle motor.
35	VS3	Power supply terminal for half bridge output section. The capacitor is connected to the GND terminal.
36	OUT3	Half bridge output terminal
37	PGND3	GND terminal for half bridge output section.
38	SWO	3-phase thread W-phase output terminal.
39	PGND4	Thread output section GND terminal.
40	SVO	3-phase thread V-phase output terminal.
41	VS4	Power supply terminal for 3-phase thread output section. The capacitor is connected to the GND terminal.
42	SUO	3-phase thread U-phase output terminal.
43	FG	FG pulse output terminal (MOS output). It outputs the pulse equivalent to 3-hole.

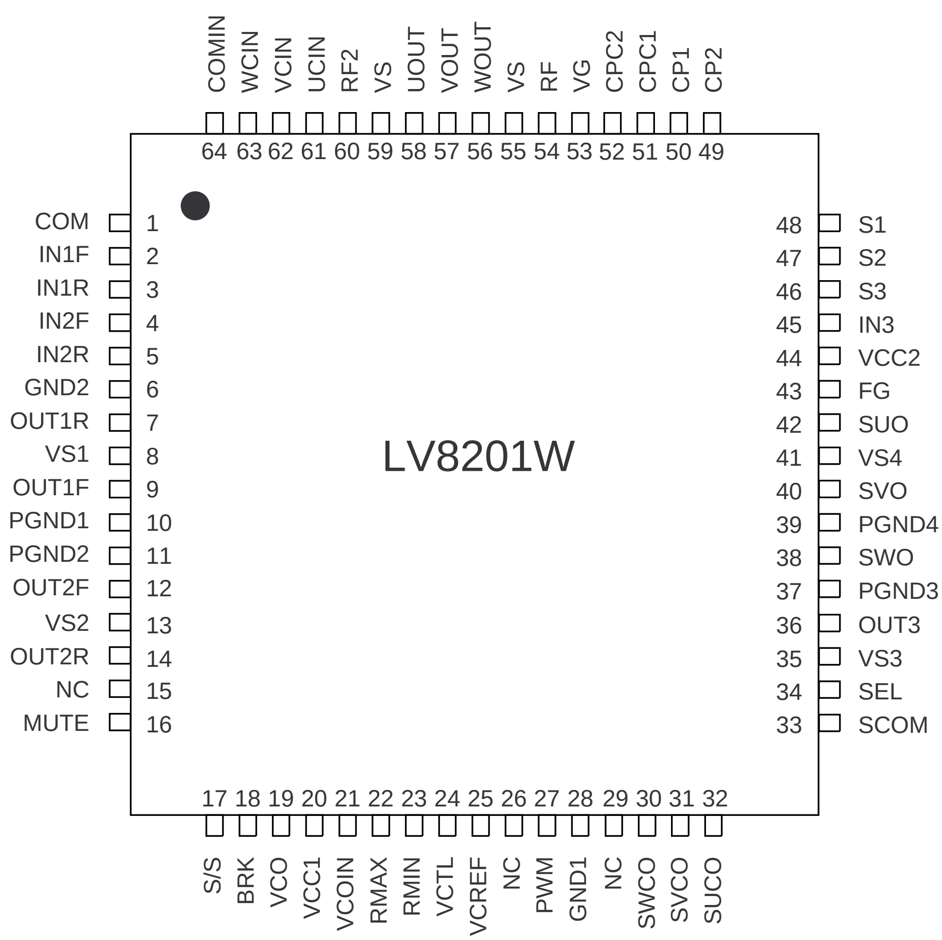
In this unit, the terminal with asterisk mark (*) is open terminal which is not connected to the outside.

IC601 VHiLV8201W+-1 :PWM Driver (LV8201W)(2/2)

Pin No.	Terminal Name	Function
44	VCC2	Terminal for supplying power to MOS circuit. Used by connecting to VCC1 terminal (pin 20).
45	IN3	Half bridge logic input terminal. Output from pin 36.
46	S3	Logic input terminal in 3-phase thread section. Output from pins 42, 40, and 38.
47	S2	
48	S1	
49	CP2	Output terminal for charge pump booster pulse. The capacitor is connected between this terminal and CPC2 terminal (pin 52). Open this when used with doubled voltage.
50	CP1	Charge pump booster output terminal. The capacitor is connected between this terminal and CPC1 terminal (pin 51).
51	CPC1	Charge pump booster terminal. The capacitor is connected between this terminal and CP1 terminal (pin 50).
52	CPC2	Charge pump booster terminal. The capacitor is connected between this terminal and CP2 terminal (pin 49). Open this when used with doubled voltage.
53	VG	Charge pump booster output terminal. The capacitor is connected to the GND terminal.
54,60	RF	Output current detection terminal. The drive current is detected by connecting the GND terminal with low resistance.
55,59	VS	Power supply terminal for driving the spindle motor. The capacitor is connected to the GND terminal.
56	WOUT	Spindle section output terminal. The motor coil is connected.
57	VOUT	
58	UOUT	
61	UCIN	Input terminal for spindle motor position detection comparator. The capacitor is connected between this terminal and COMIN terminal (pin 64).
62	VCIN	
63	WCIN	
64	COMIN	Input terminal for spindle motor position detection comparator. The capacitor is connected between this terminal and pins 61-63.

In this unit, the terminal with asterisk mark (*) is open terminal which is not connected to the outside.

IC601 VHiLV8201W+-1 :PWM Driver (LV8201W)



IC202 RH-iX2824AFZZ: 16M Bit D-RAM (IX2824AF)

Pin No.	Terminal Name	Function
1	Vcc	Power supply (2.6V)
2	I/O1	Data input/data output
3	I/O2	Data input/data output
4	WE	Write enable
5	RAS	Low address strobe
6*	NC	Not connected
7	A10	Address input
8-11	A0-A3	Address input
12	Vcc	Power supply (2.6V)
13	GND	Ground (0V)
14-19	A4-A9	Address input
20	OE	Output enable
21	CAS	Column address strobe
22	I/O3	Data input/data output
23	I/O4	Data input/data output
24	GND	Ground (0V)

In this unit, the terminal with asterisk mark (*) is open terminal which is not connected to the outside.

— M E M O —

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Explanation of capacitors/resistors parts codes

Capacitors

VCC .... Ceramic type
VCK .... Ceramic type
VCT .... Semiconductor type
VC • • MF .... Cylindrical type (without lead wire)
VC • • MN .... Cylindrical type (without lead wire)
VC • • TV .... Square type (without lead wire)
VC • • TQ .... Square type (without lead wire)
VC • • CY .... Square type (without lead wire)
VC • • CZ .... Square type (without lead wire)
VC • • • • • • • • • • J .. The 13th character represents capacity difference.
("J" ±5%, "K" ±10%, "M" ±20%, "N" ±30%,
"C" ±0.25 pF, "D" ±0.5 pF, "Z" +80-20%.)

If there are no indications for the electrolytic capacitors, error is ±20%.

Resistors

VRD .... Carbon-film type
VRS .... Carbon-film type
VRN .... Metal-film type
VR • • MF .... Cylindrical type (without lead wire)
VR • • MN .... Cylindrical type (without lead wire)
VR • • TV .... Square type (without lead wire)
VR • • TQ .... Square type (without lead wire)
VR • • CY .... Square type (without lead wire)
VR • • CZ .... Square type (without lead wire)
VR • • • • • • • • • • J .. The 13th character represents error.
("J" ±5%, "F" ±1%, "D" ±0.5%.)

If there are no indications for other parts, the resistors are ±5% carbon-film type.

NOTE:
Parts marked with "⚠" are important for maintaining the safety of the set.
Be sure to replace parts with specified ones for maintaining the safety and performance of the set.

INTEGRATED CIRCUITS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
IC1	VHIVHC164FT-1	J		CMOS LOGIC,VHC164FT [Main PWB Version B,C,X]
IC2	VHITC7W74FK-1	J		CMOS LOGIC,TC7W74FK [Main PWB Version B,C,X]
IC101	VHIIR3R58M/-1	J	AM	RF Signal Processor,IR3R58M
IC201	VHILR378161-1	J	BQ	Endec/Servo/Atrac,LR378161
IC202	RH-IX2824AFZZ	J	AX	16M BIT D-RAM,IX2824AF
IC251	VSFTD2017++-1	J	AL	N-ch MOS FET,FTD2017
IC253	VSXP04313++-1	J	AC	Power Select Charge Drive, XP04313
IC255	VHINJM022V/-1	J	AG	Ope Amp.,NJM022V
IC256	VSXP04315++-1	J	AC	Digital Transistor,XP04315
IC257	VHIS80808LN-1	J	AE	Reset,S80808LN
IC258,259	VSXP04501++-1	J	AC	Power Transistor,XP04501
IC260	VSXP04313++-1	J	AC	Power Select Charge Drive, XP04313
IC351	VHI74ACT02T-1	J	AE	Head Driver,74ACT02T
IC353	VSMCH6616++-1	J	AG	Head Driver,MCH6616
IC354	VHICPH5608/-1	J	AH	Head Driver,CPH5608
IC401	RH-IX0484AWZZ	J	BB	System Microcomputer,IX0484AW [Main PWB Version B,C,X]
IC401	RH-IX0529AWZZ	J	BA	System Microcomputer,IX0529AW [Main PWB Version D]
IC402	VHI58X2402T-1	J	AF	EEPROM,58X2402T
IC431	VHIS80820LN-1	J	AD	Reset,S80820LN
IC501	VHIAK4551VT-1	J	AU	AD/DA Converter,AK4551VT
IC601	VHILV8201W+-1	J	BA	PWM Driver,LV8201W
IC651	VHILB1930M/-1	J	AH	Motor Driver,LB1930M
IC701	VHIIR3R54N/-1	J	AQ	Audio Amp.,IR3R54N
IC703	VHIIR3R59N/-1	J	AN	Audio Amp.,IR3R59N
IC771	VHI6204B23M-1	J	AF	2.3V Regulator,6204B23M
IC801	VHIMM3032A+-1	J	AE	3.0V Regulator,MM3032A
IC802	VSXP04501++-1	J	AC	Power Transistor,XP04501
IC803	VHIS80819LN-1	J	AE	Reset IC,S80819LN
IC809	VSXP04313++-1	J	AC	Power Select Charge Drive, XP04313
IC841	VHI6372C251-1	J	AH	2.5V UP Converter,6372C251
IC852	VHIIR3M14N/-1	J	AK	DC/DC Converter,IR3M14N
IC871	VHI74HC1G86-1	J	AE	Exclusive or Gate,74HC1G86
IC873	VHI6204B45M-1	J	AF	4.5V Regulator,6204B45M
IC892	VSXP04501++-1	J	AC	Power Transistor,XP04501
IC902	VHI62FP1602-1	J	AF	Regulator,62FP1602

TRANSISTORS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
Q250	VSKTA2015Y+-1	J	AC	Silicon,PNP,KTA2015 Y
Q251	VS2SD1819AS-1	J	AC	Silicon,NPN,2SD1819 AS
Q257	VS2SB1462J+-1	J	AC	Silicon,PNP,2SB1462 J
Q461	VS2SD1819AS-1	J	AC	Silicon,NPN,2SD1819 AS
Q711	VSDTC123TKA-1	J	AC	Digital,NPN,DTC123 TKA
Q801	VS2SJ520TL+-1	J	AM	FET,2SJ520 TL (P-ch)
Q803	VSUN5213+++-1	J	AC	Digital,NPN,UN5213
Q821	VSMCH3409++-1	J	AF	FET,MCH3409
Q851	VSMCH3409++-1	J	AF	FET,MCH3409
Q891	VSXP01401++-1	J	AC	Silicon,PNP,XP01401
Q901	VSUN5210+++-1	J	AC	Digital,NPN,UN5210

DIODES

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
D1,2	VHD1SS385++-1	J		Silicon,1SS385 [Main PWB Version B,C,X]
D251	VHDMA111///-1	J	AC	Silicon,MA111
D281	VHDMA111///-1	J	AC	Silicon,MA111
D351	VHDSBE803//-1	J	AD	Silicon,SBE803
D431	VHDMA132WK/-1	J	AB	Silicon,MA132WK
D461	VHDRB731U//-1	J	AC	Silicon,RB731U
D467	VHD1SS389//-1	J	AB	Silicon,1SS389
D495,496	VHEMA8075M/-1	J	AC	Zener,MA8075M
D651	VHDF10J2E//-1	J	AC	Silicon,F10J2E
D801	VHDF05J2L//-1	J	AC	Silicon,F05J2L
D802	VHEMA8051M/-1	J	AC	Zener,MA8051M
D803	VHD1SS388++-1	J	AC	Silicon,1SS388
D821	VHDM1FH3+++-1	J	AD	Schottky,M1FH3
D841	VHDF10J2E//-1	J	AC	Silicon,F10J2E
D842,843	VHDHRB0103B-1	J	AC	Silicon,HRB0103B
D851	VHDM1FH3+++-1	J	AD	Schottky,M1FH3
D861,862	VHDF10J2E//-1	J	AC	Silicon,F10J2E

COILS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
L100	VPBNN100K0000	J	AC	10 µH
L101	RCILC0353AFZZ	J	AB	Tip Solid Induction,100mA
L171	RCILC0356AFZZ	J	AC	10 µH
L202	VPBNN100K0000	J	AC	10 µH
L204	RCILC0353AFZZ	J	AB	Tip Solid Induction,100mA
L452	RCILC0352AFZZ	J	AB	Tip Impeder,150mA
L453,454	RCILC0353AFZZ	J	AB	Tip Solid Induction,100mA
L601~604	RCILC0372AFZZ	J	AC	22 µH,Choke
L605	RCILC0372AFZZ	J	AC	22 µH,Choke
L702~704	RCILC0353AFZZ	J	AB	Tip Solid Induction,100mA
L800,801	RCILZ0027AWZZ	J	AD	100 MHz,Tip Impeder
L802	RCILZ0027AWZZ	J	AD	100 MHz,Tip Impeder
L821	RCILC0016AWZZ	J	AE	10 µH
L841	RCILC0372AFZZ	J	AC	22 µH,Choke
L851	RCILC0016AWZZ	J	AE	10 µH
L860	VPCBM101K0000	J	AC	100 µH

VIBRATORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
XL201	RCRSC0028AFZZ	J	AH	Crystal,33.8688 MHz
XL401	RCRM-0203AFZZ	J	AD	Ceramic,4.19 MHz

CAPACITORS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C1	VCCCCY1HH101J	J	AA	100 pF (CH),50V [Main PWB Version B,C,X]
C2,3	VCKYCY1CB104K	J	AB	0.1 µF,16V [Main PWB Version B,C,X]
C100	VCSAFA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C102,103	VCKYCY0JB105K	J	AC	1 µF,6.3V
C106	VCKYCY0JB105K	J	AC	1 µF,6.3V
C107	VCKYCZ1CB333K	J	AB	0.033 µF,16V
C108,109	VCKYCY0JB105K	J	AC	1 µF,6.3V
C110	VCKYCY1AB224K	J	AB	0.22 µF,10V
C111	VCKYCY0JB105K	J	AC	1 µF,6.3V
C112	VCKYCZ1CB333K	J	AB	0.03 µF,16V
C113	VCKYCY0JB105K	J	AC	1 µF,6.3V
C114	VCCCCZ1HH5R0C	J	AB	5 pF (CH),50V
C121,122	VCCCCZ1HH221J	J	AB	220 pF (CH),50V
C130,131	VCKYCY1CB104K	J	AB	0.1 µF,16V
C132,133	VCKYCY1AB224K	J	AB	0.22 µF,10V
C165	VCKYCY1EB333K	J	AC	0.033 µF,25V
C171,172	VCSAFA0JJ336M	J	AE	33 µF,6.3V,Electrolytic,Tantalum
C201	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C202	VCSAFA0JJ336M	J	AE	33 µF,6.3V,Electrolytic,Tantalum
C203	VCKYCY1CB104K	J	AB	0.1 µF,16V
C204	VCKYCY1AB474K	J	AC	0.47 µF,10V
C205	VCKYCY1CB104K	J	AB	0.1 µF,16V
C207	VCKYCY1CB104K	J	AB	0.1 µF,16V
C209	VCKYCY1CB104K	J	AB	0.1 µF,16V
C211	VCCCCY1HH5R0C	J	AA	5 pF (CH),50V
C212	VCCCCY1HH8R0D	J	AA	8 pF (CH),50V
C221	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C251	VCKYCY1CB104K	J	AB	0.1 µF,16V
C252	VCKYCY1CB104K	J	AB	0.1 µF,16V
C253~255	VCKYCY1CB104K	J	AB	0.1 µF,16V
C259	VCKYCY1CB104K	J	AB	0.1 µF,16V
C291	VCKYCY0JB105K	J	AC	1 µF,6.3V
C351	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C353	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C354	VCKYCY1CB104K	J	AB	0.1 µF,16V
C357	VCKYCY1CB104K	J	AB	0.1 µF,16V
C361	VCKYTV1HB393K	J	AB	0.039 µF,50V
C401	VCKYCY1CB104K	J	AB	0.1 µF,16V
C431	VCKYCY1AB474K	J	AC	0.47 µF,10V
C454	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C481	VCKYCY1CB104K	J	AB	0.1 µF,16V
C482	VCKYCY1EB103K	J	AA	0.01 µF,25V
C492	VCKYCY0JB105K	J	AC	1 µF,6.3V
C501,502	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C503	VCSATA1AJ335M	J	AB	3.3 µF,10V,Electrolytic,Tantalum
C509,510	VCKYTV1CF225Z	J	AC	2.2 µF,16V
C511	VCKYCY0JB105K	J	AC	1 µF,6.3V
C551	VCKYCY1EB223K	J	AB	0.022 µF,25V
C601~605	VCKYCY0JB105K	J	AC	1 µF,6.3V
C608	VCKYCY0JB105K	J	AC	1 µF,6.3V
C611,612	VCKYCY1CB104K	J	AB	0.1 µF,16V
C613	VCKYCY0JB105K	J	AC	1 µF,6.3V

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
C615	VCKYCY0JB105K	J	AC	1 µF,6.3V
C617~619	VCKYCZ1EB472K	J	AB	0.0047 µF,25V
C620	VCKYCY1HB682K	J	AA	0.0068 µF,50V
C621	VCKYCY0JB105K	J	AC	1 µF,6.3V
C652	VCKYCY1CB104K	J	AB	0.1 µF,16V
C701,702	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C703	VCKYCY1EB103K	J	AA	0.01 µF,25V
C711,712	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C713,714	VCKYCY0JB105K	J	AC	1 µF,6.3V
C715,716	VCKYCY1CB104K	J	AB	0.1 µF,16V
C733,734	VCKYCY1CB104K	J	AB	0.1 µF,16V
C753,754	VCKYCY0JB105K	J	AC	1 µF,6.3V
C758	VCKYCY0JB105K	J	AC	1 µF,6.3V
C760	VCKYCY1CB104K	J	AB	0.1 µF,16V
C761,762	VCKYTV1CF225Z	J	AC	2.2 µF,16V
C765,766	VCKYTV1CB224K	J	AB	0.22 µF,16V
C771	VCSAFA0JJ336M	J	AE	33 µF,6.3V,Electrolytic,Tantalum
C773	VCKYCY1AB224K	J	AB	0.22 µF,10V
C774	VCKYCY0JB105K	J	AC	1 µF,6.3V
C801	VCKYCY0JB105K	J	AC	1 µF,6.3V
C802	VCKYCY1EB103K	J	AA	0.01 µF,25V
C818	VCKYCY1CB104K	J	AB	0.1 µF,16V
C821	VCKYCY0JB105K	J	AC	1 µF,6.3V
C830	VCKYCY0JB105K	J	AC	1 µF,6.3V
C836	VCKYCY0JB105K	J	AC	1 µF,6.3V
C837	VCKYCY0JB105K	J	AC	1 µF,6.3V
C839	VCKYCY1AB334K	J	AC	0.33 µF,10V
C840	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C841	VCKYCY0JB105K	J	AC	1 µF,6.3V
C842	VCSAFA0JJ336M	J	AE	33 µF,6.3V,Electrolytic,Tantalum
C843	VCKYCY1AB224K	J	AB	0.22 µF,10V
C845,846	VCKYCY1CB104K	J	AB	0.1 µF,16V
C847,848	VCKYCY1CB104K	J	AB	0.1 µF,16V
C850	VCKYCY1CB104K	J	AB	0.1 µF,16V
C851	VCKYCY0JB105K	J	AC	1 µF,6.3V
C852	RC-SZ0001AWZZ	J	AG	22 µF,6.3V,Electrolytic
C853	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C856	VCCCCY1HH680J	J	AA	68 pF (CH),50V
C857	VCCCCY1HH180J	J	AA	18 pF (CH),50V
C860	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C862,863	VCKYCY0JB105K	J	AC	1 µF,6.3V
C864,865	VCKYCY1CB104K	J	AB	0.1 µF,16V
C866,867	VCKYCY1CB104K	J	AB	0.1 µF,16V [Except for Main PWB Version B,C]
C869	VCSATE0JJ476M	J	AD	47 µF,6.3V,Electrolytic,Tantalum
C876	VCKYCY0JB105K	J	AC	1 µF,6.3V

RESISTORS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
	VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8×1.55mm,Green
	VRS-CZ1JB000J	J	AB	0 ohm,Jumper,0.5×1.0mm
	VRS-TV2AB000J	J	AA	0 ohm,Jumper,1.25×2mm,Green
R1,2	VRS-CY1JB103J	J	AA	10 kohm,1/16W [Main PWB Version B,C,X]
R101,102	VRS-CZ1JB223J	J	AB	22 kohms,1/16W
R111	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R112	VRS-CZ1JB224J	J	AA	220 kohms,1/16W
R131	VRS-CZ1JB124D	J	AB	120 kohms,1/16W
R132	VRS-CZ1JB824D	J	AB	820 kohms,1/16W
R133	VRS-CZ1JB124D	J	AB	120 kohms,1/16W
R134	VRS-CZ1JB824D	J	AB	820 kohms,1/16W
R135	VRS-CZ1JB563D	J	AA	56 kohms,1/16W
R136	VRS-CZ1JB394D	J	AA	390 kohms,1/16W
R137	VRS-CZ1JB563D	J	AA	56 kohms,1/16W
R138	VRS-CZ1JB394D	J	AA	390 kohms,1/16W
R139	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R140	VRS-CY1JB394J	J	AA	390 kohms,1/16W
R161	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R204	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R205	VRS-CY1JB273F	J	AA	27 kohms,1/16W
R206	VRS-CY1JB104F	J	AA	100 kohm,1/16W
R207	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R222	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
R250,251	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R252	VRS-CY1JB154F	J	AA	150 kohms,1/16W
R253	VRS-CY1JB393F	J	AF	39 kohms,1/16W
R254	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R255	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R256	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R257	VRS-CY1JB273F	J	AA	27 kohms,1/16W
R261	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R262	VRS-CY1JB124F	J	AA	120 kohms,1/16W
R266	VRS-CY1JB473F	J	AA	47 kohms,1/16W
R267	VRS-CY1JB103F	J	AA	10 kohm,1/16W
R269	VRS-CY1JB393F	J	AF	39 kohms,1/16W
R270,271	VRS-CY1JB683F	J	AA	68 kohms,1/16W
R272	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R277	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R279	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R281	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R282	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
R283	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R284	VRS-CY1JB394J	J	AA	390 kohms,1/16W
R285	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R286	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R287	VRS-CY1JB564J	J	AA	560 kohms,1/16W
R288	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R291	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R292	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R293	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R294,295	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R296	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R361	VRS-TQ2BB150J	J	AA	15 ohms,1/8W
R402	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R403	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R404	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R405,406	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R411	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R412	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R413~416	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R422	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R423	VRS-CY1JB223F	J	AA	22 kohms,1/16W
R424,425	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R431	VRS-CY1JB334J	J	AA	330 kohms,1/16W
R451	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R452	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R453	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R456	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R457	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R458	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R460	VRS-CY1JB683J	J	AA	68 kohms,1/16W
R461	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R462	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R463	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R464	VRS-CY1JB224J	J	AA	220 kohms,1/16W
R465	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R466	VRS-CY1JB564J	J	AA	560 kohms,1/16W
R467	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R481	VRS-CY1JB333F	J	AA	33 kohms,1/16W
R482,483	VRS-CY1JB183F	J	AA	18 kohms,1/16W
R501,502	VRS-CY1JB471J	J	AA	470 ohms,1/16W
R602	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R603	VRS-CY1JB334J	J	AA	330 kohms,1/16W
R604	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R605	VRS-CZ1JB105J	J	AB	1 Mohm,1/16W
R610,611	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R701	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R702	VRS-CY1JB220J	J	AA	22 ohms,1/16W
R703	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R711,712	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R713,714	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R715,716	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R717,718	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R719,720	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R728A	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R754	VRS-CY1JB154J	J	AA	150 kohms,1/16W
R757	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R758	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R761	VRS-CY1JB154J	J	AA	150 kohms,1/16W
R762	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R765,766	VRS-CY1JB150J	J	AB	15 ohms,1/16W
R767,768	VRS-CY1JB4R7J	J	AA	4.7 ohms,1/16W
R802	VRS-CY1JB561J	J	AA	560 ohms,1/16W
R803	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R806	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R807	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R808	VRS-TV2AB1R0F	J	AB	1 ohm,1/10W
R809	VRS-TV2AB1R0J	J	AA	1 ohm,1/10W
R810	VRS-TV2AB1R0F	J	AB	1 ohm,1/10W
R811	VRS-TV2AB1R0J	J	AA	1 ohm,1/10W
R812~815	VRS-CY1JB103F	J	AA	10 kohm,1/16W
R816	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R818	VRS-CY1JB564J	J	AA	560 kohms,1/16W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R819	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R831,832	VRS-CY1JB184F	J	AA	180 kohms,1/16W
R844	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R850	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R853	VRS-CY1JB274J	J	AA	270 kohms,1/16W
R854	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R855	VRS-CY1JB394F	J	AA	390 kohms,1/16W
R856	VRS-CY1JB335J	J	AA	3.3 Mohms,1/16W
R857	VRS-CY1JB334F	J	AA	330 kohms,1/16W
R871	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R891	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R892	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R920	VRS-CY1JB104J	J	AA	100 kohm,1/16W

OTHER CIRCUITRY PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
CN101	QCNCW046XAWZZ	J	AM	Socket,22Pin
CN451	QCNCW804MAFZZ	J	AD	Socket,12Pin
CN482	QCNCW804GAFZZ	J	AD	Socket,7Pin
CN601	QCNCW716LAFZZ	J	AF	Socket,11Pin
⚠ F841	QFS-L401AAFNZ	J	AE	Square Tip Type Fuse,0.4A,DC60V
J701	VHLGP1FD210-1	J	AM	Jack,Optical/Line In
J703A	QJAKM0021AWZZ	J	AD	Jack,Headphones
J801	QJAKC0007AWZZ	J	AF	Jack,DC IN,5V
M901	RMOTV0044AWZZ	J	AW	Motor Ass'y [Spindle]
M902	RMOTS0002AWZZ	J	AT	Motor Ass'y [Sled]
M903	RMOTV0033AWZZ	J	AW	Motor Ass'y [Lift]
⚠ PS801	VHHSMDM110V-1	J	AK	Conductive Restn Switch,1.1A
SW401	QSW-M0001AWZZ	J	AD	Switch,Push Type [Eject]
SW403	QSW-M0172AFZZ	J	AD	Switch,Push Type [Lid Open]
SW601	QSW-M0170AFZZ	J	AD	Switch,Push Type [Disc Protect]

MD MECHANISM PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
⚠ 1	92LHPM280	J	BT	Optical Pickup Unit
2	LANGZ0053AWFW	J	AD	Bracket,Left
3	LANGZ0052AWFW	J	AC	Bracket,Right
4	LCHSM0148AWM1	J	AG	Main Chassis Ass'y
5	LHLDX3016AWM1	J	AK	Cartridge Holder Ass'y
6	MLEVF0073AWFW	J	AC	Lever,Lift
7	MLEVF0074AWFW	J	AC	Lever,Eject
8	MLEVF0075AWFW	J	AC	Lever,Cancel
9	MLEVF0102AWFW	J	AC	Lift Link Lever
10	MLEVF0103AWFW	J	AC	Lift Move Lever
11	MLEVF0104AWFW	J	AC	Protect Lever,Eject
12	MSPRP0044AWFJ	J	AB	Spring,Thrust
13	MSPRP0067AWFJ	J	AB	Spring,Drive Grip
14	MSPRT0054AWFJ	J	AB	Spring,Eject Lever
15	NBRGC0004AWZZ	J	AB	Metal
16	NGERH0096AWZZ	J	AC	Gear,Drive
17	NGERH0125AWZZ	J	AB	Drive Wheel
18	NSFTD0011AWZZ	J	AG	Drive Screw
19	QPWBH0023AWZZ	J	AK	Mechanism Flexible PWB Ass'y
20	RCILH0003AWM1	J	AT	Magnetic Head Ass'y
501	LX-BZ0040AWZZ	J	AB	Screw,ø1.4×1.5mm
502	LX-BZ0059AWZZ	J	AB	Screw,ø1.4×1.8mm
503	LX-JZ0027AWZZ	J	AA	Screw,ø1.7×3.5mm
504	LX-JZ0034AWZZ	J	AA	Screw,ø1.4×5mm
505	LX-JZ0167AFZZ	J	AB	Screw,ø1.4×3.0mm
506	LX-WZ9290AFZZ	J	AA	Washer,ø0.8×ø2.4×0.2mm
M901	RMOTV0044AWZZ	J	AW	Motor Ass'y [Spindle]
M902	RMOTS0002AWZZ	J	AT	Motor Ass'y [Sled]
M903	RMOTV0033AWZZ	J	AW	Motor Ass'y [Lift]

CABINET PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
201	GCABA1258AWSA	J	AN	Top Cabinet
202	GCABB1272AWSA	J	AL	Bottom Cabinet
203	GCOVA1414AWSB	J	AD	Cover,Terminal
204	GDORB0005AWSB	J	AD	Door,Battery
205	HDECQ0820AWSA	J	AK	Decoration Plate,Window
206	JKNBZ0860AWSA	J	AM	Button,Operation
207	JKNBZ0861AWSB	J	AC	Knob,Eject
208	LANGT0127AWFW	J	AE	Bracket,Key Switch
209	LANGT0128AWM1	J	AG	Bracket,Ass'y.,Mechanism
210	LANGT0129AWFW	J	AD	Arm Bracket,L
211	LANGZ0057AWM1	J	AH	Terminal Ass'y.,Battery (+)
212	LBOSZ0002AWZZ	J	AC	Boss
213	LHLDZ1406AWZZ	J	AB	Holder,Battery Terminal (-)
214	MLEVP0119AWZZ	J	AC	Lever,Eject

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
215	MLEVP0120AWZZ	J	AC	Lever,Detect
216	MSPRD0174AWFJ	J	AB	Spring,Detect Lever
217	MSPRT0068AWFJ	J	AB	Spring,Eject Lever
218	PCUSU0008AWZZ	J	AB	Cushion,LCD Unit
219	PCUSZ0040AWZZ	J	AB	Cushion,Battery
220	PSHEF0026AWZZ	J	AA	Felt
221	PSHET0086AWZZ	J	AH	Shield Sheet,A
222	PSHET0087AWZZ	J	AB	Insulation Sheet,Battery
223	PSHET0098AWZZ	J	AC	Shield Sheet,B
224	PSHEZ0115AWZZ	J	AA	Tape
225	PSHEZ0137AWZZ	J	AC	Tape,Window
226	QTANB9028AWFQ	J	AC	Terminal,Charging (+,-)
227	QTANB9043AWFQ	J	AE	Terminal,Battery (-)
228	RUNTK0018AWZZ	J	AN	Key Switch Flexible PWB Ass'y.
229	RUNTZ0046AWZZ	J	BA	LCD Unit Ass'y.
230	PSHET0103AWZZ	J		Sheet,Knob
231	PSHET0105AWZZ	J		Sheet,LCD
601	LX-BZ0048AWFN	J	AC	Screw,ø1.4×2.5mm
603	LX-BZ0063AWFC	J	AB	Screw,ø1.4×2.5mm
604	LX-BZ0960AFZZ	J	AB	Screw,ø1.4×1.5mm
605	LX-BZ1008AFFC	J	AB	Screw,ø1.4×2mm
606	LX-CZ0010AWFC	J	AB	Screw,ø1.4×4mm
607	LX-CZ0011AWFD	J	AB	Screw,ø1.4×2mm
608	LX-CZ0016AWFN	J	AB	Screw,ø1.4×2.5mm
609	LX-CZ0019AWFF	J	AB	Screw,ø1.4×3mm

ACCESSORIES

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
	GCASZ0002AWSA	J	AL	Battery Case
	PCOVW1015AWZZ	J	AC	Battery Carrying Case
	QCNWG0029AWZZ	J	AK	Connecting Cord,RCA Type
⚠	RADPA3059AWZZ	J	AX	AC Adapter
	RPHOH0011AWZZ	J	AT	Earphones
	TINSE0411AWZZ	J	AG	Operation Manual
	TINSE0412AWZZ	J	AF	Quick Guide
	UBATM0009AWSA	J	AY	Rechargeable Battery

P.W.B. ASSEMBLY (Not Replacement Item)

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
PWB-A	92LPWB3804MDSS	J	—	Main

OTHER SERVICE PARTS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
	UDSKM0001AFZZ	J	AZ	Recording Mini Disc
	88GMMD-110	J	BV	High Reflection Disc MMD-110 (TEAC Test MD)
	88GMMD-212	J	BU	Low Reflection Disc MMD-212 (TEAC Test MD)
	88GMMD-213A	J	BT	Low Reflection Disc MMD-213A (TEAC Test MD)

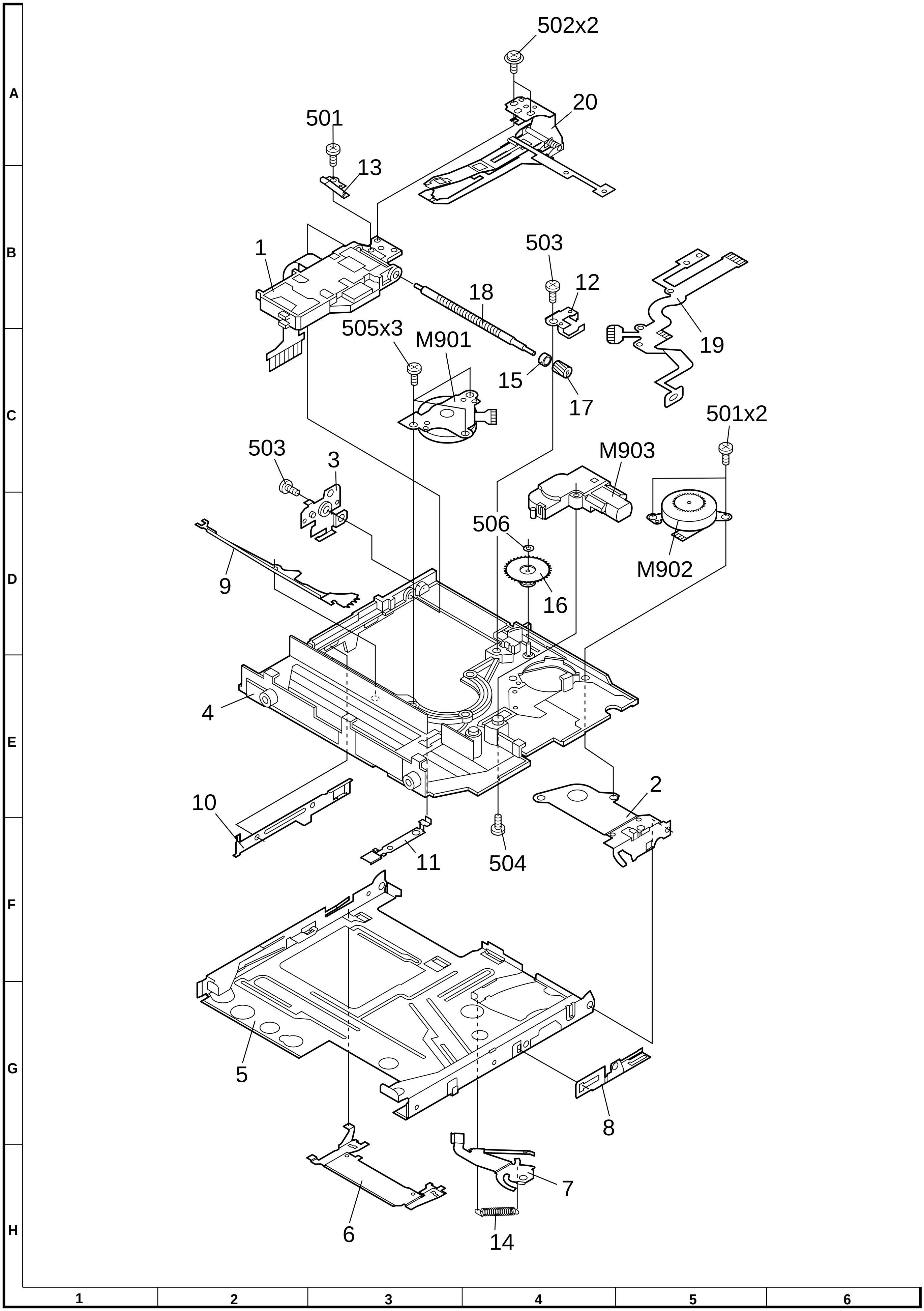


Figure 4 MD MECHANISM EXPLODED VIEW

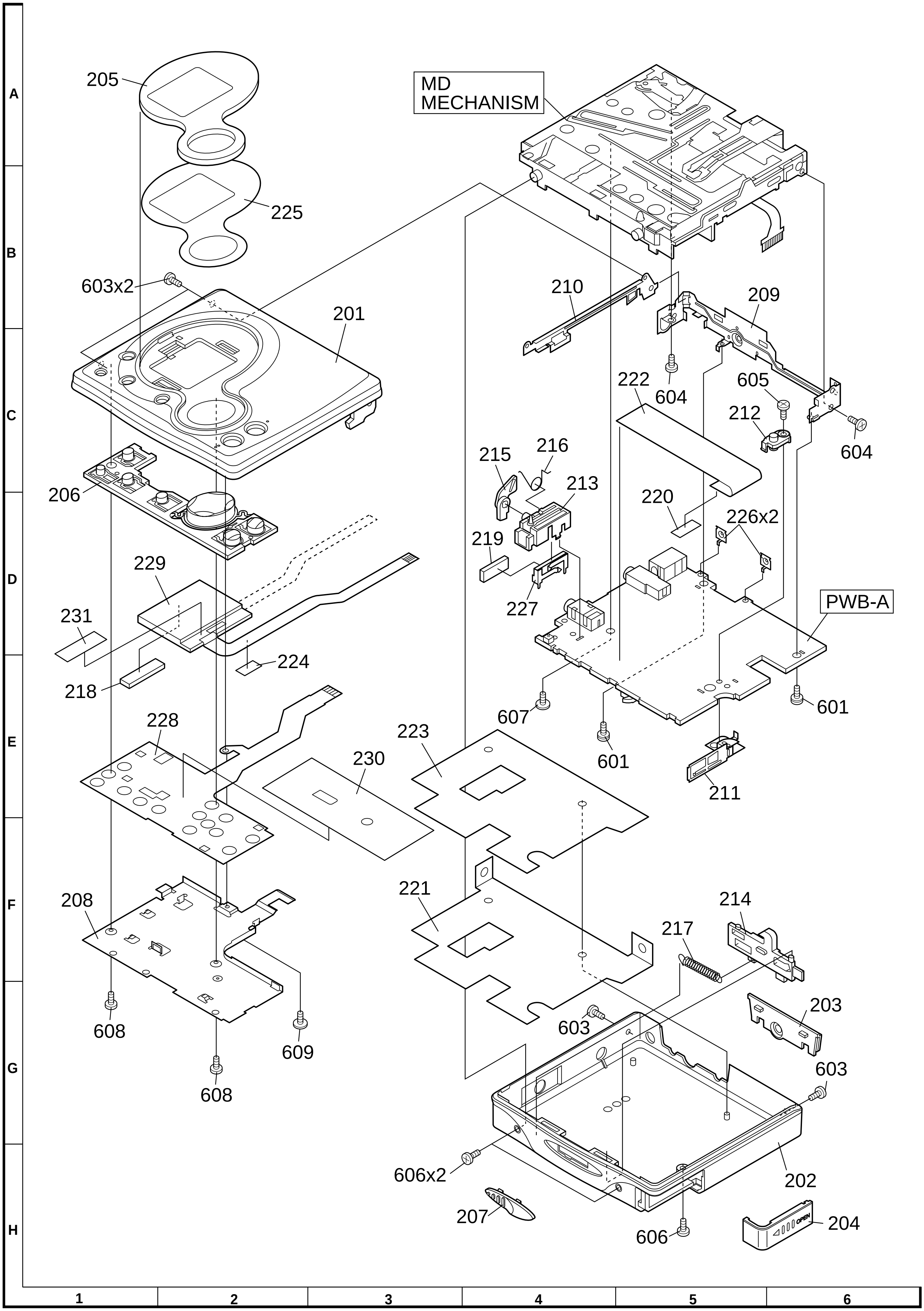
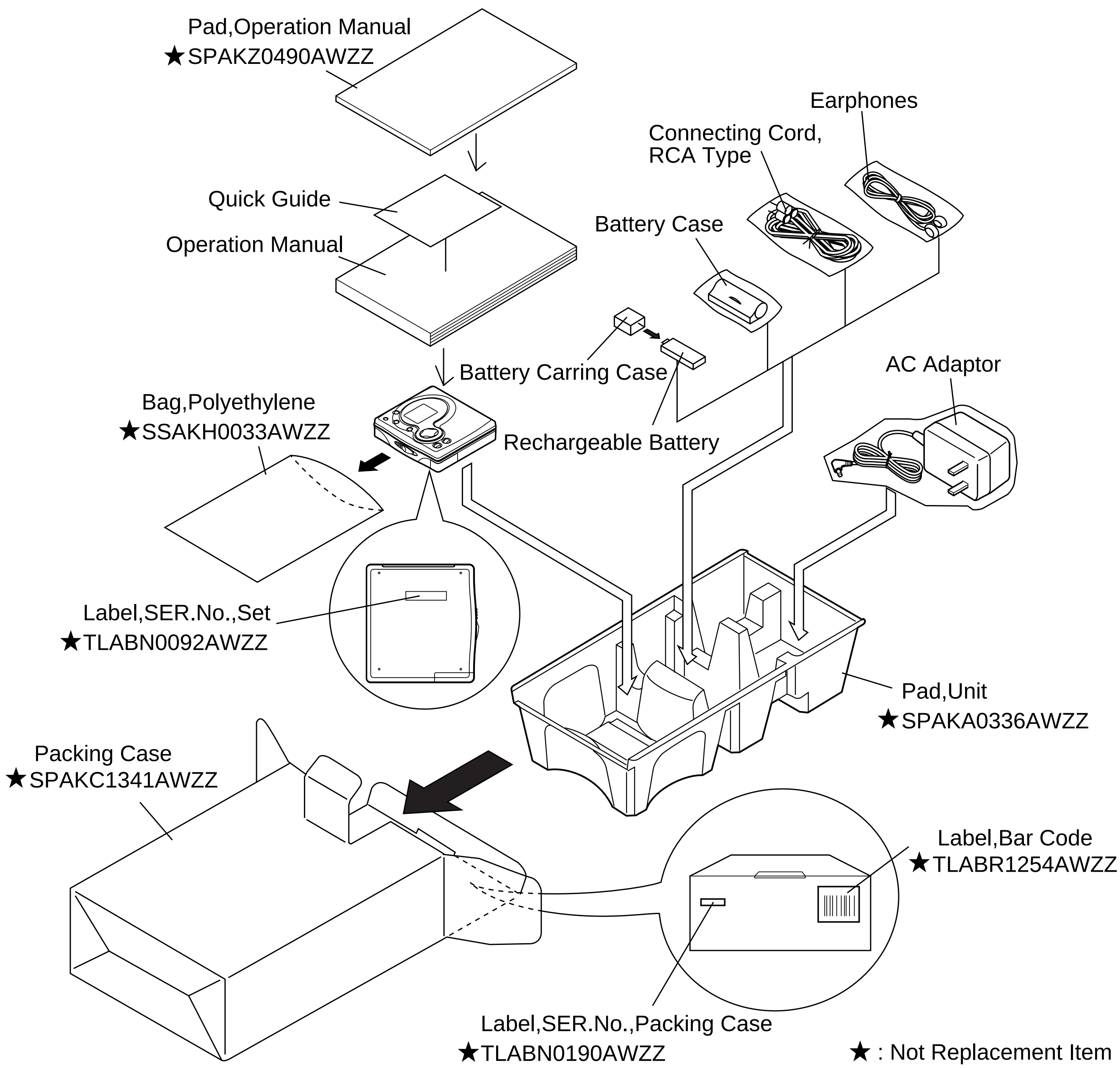


Figure 5 CABINET EXPLODED VIEW

PACKING OF THE SET (FOR U.S.A. ONLY)



–MEMO–

–MEMO–

SHARP

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